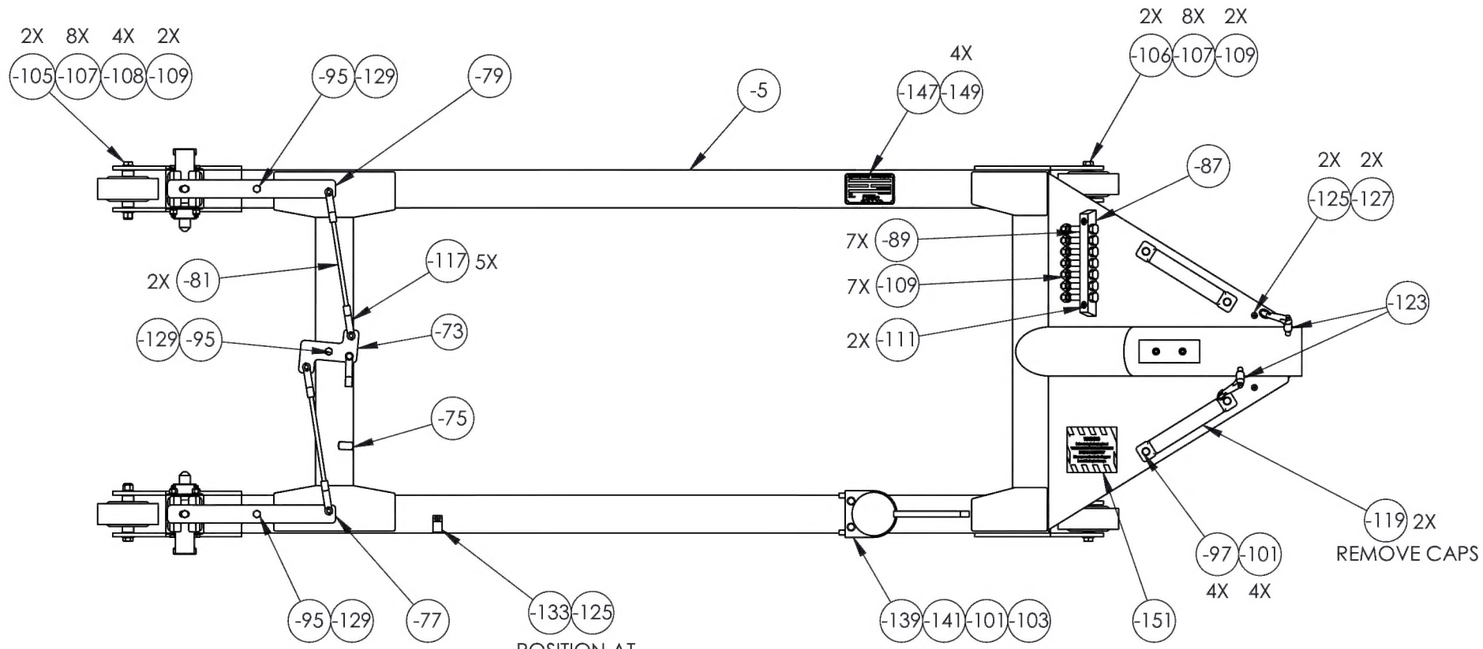
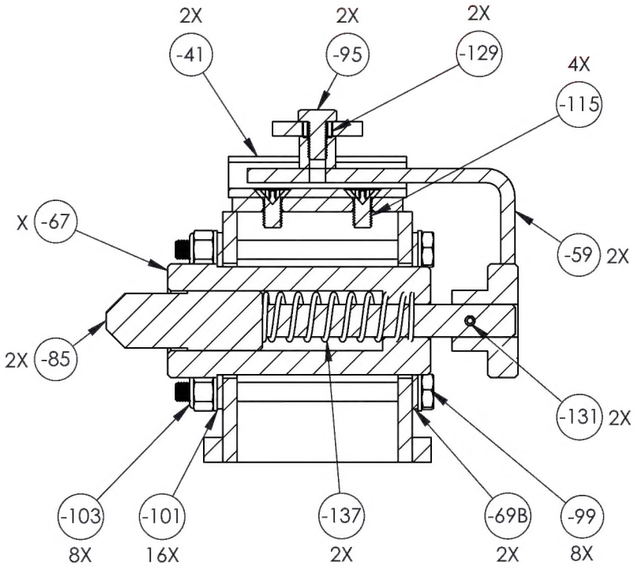
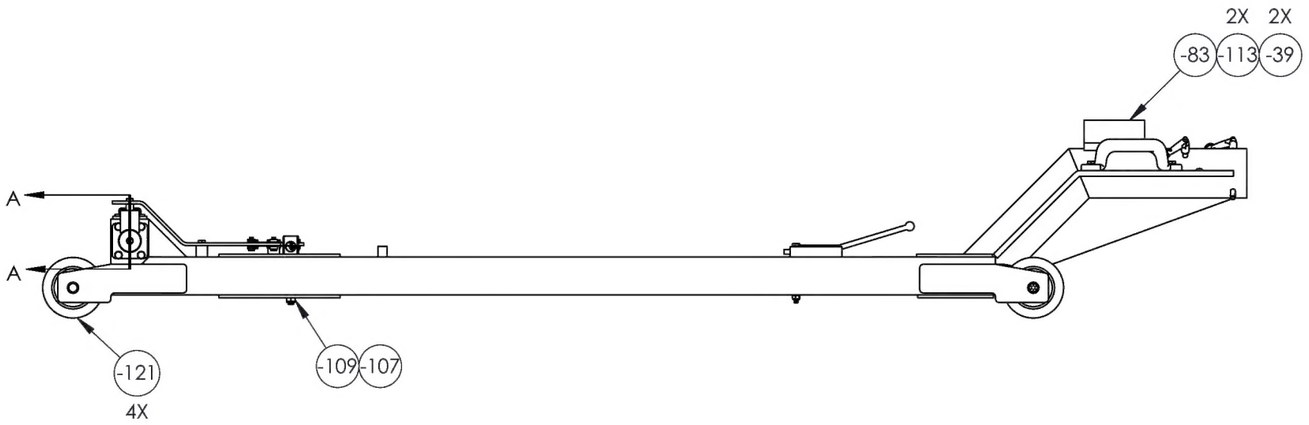
SEE ATTACHED DEVIATION





SECTION A-A
SCALE 1 : 2



DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03
REV	2
MAT'L	
DRAWN BY:	CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1	APPROVED D Weil
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R	HEAT TREAT
2. DIMENSIONAL LIMITS APPLY AFTER PLATING	FINISH
	SPEC
	USED ON MODEL: AW139
SCALE 1:10	DATE 11/28/2012
	SHEET 1 OF 43

SEE ATTACHED DEVIATION

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**CH'D -39** RIVET NUT FROM ALUMINUM, **-83** FROM POLYURETHANE 45-50A, **-105** FROM AN6-23A, ADDED **-131, -133, -135, -137, -139,** & **-141.**	1/25/2013	RJC	SE
1A		CH'D TITLE BLOCK WAS RED BARN IS DART. **-87** & **-89** CH'D DESCRIPTION WAS "SHEER" IS "SHEAR". **-121** CH'D B/O INFO WAS MSC #89764302 IS MSC #65366338. ADDED **-143** SAFETY PIN TOWING/PUSHING #RBW0905G12631-3G. ADDED **-145** TONGUE ASSEMBLY #RBW0905G00134-3G-01.	12/20/2013	CFS	RW
2	14-0167	REMOVED **-143** & **-145**. **-5** CH'D SPACING FOR -54 & -56 FRONT INSIDE WHEEL BRACKETS & ADDED DIM, WAS 2.500 IS 1.865. REMOVED -35 FROM WELDMENT. **-6** ADDED -35 TO WELDMENT. **-23** & **-25** DELETED DIMS 9.421, 4.047, 1.623, 4.933. CH'D DIMS WAS (4.30) IS 4.30, WAS (6.313) IS 6.313, WAS (2X 1.063) IS 2X 1.063. **-35** CH'D DIMS WAS 1.50 IS (1.50), WAS .13 IS (.13). **-41** CH'D DIM WAS .519 IS (.519). **-43** CH'D DIM WAS .12 IS (.12). **-54** & **-56** CH'D MAT'L WAS 6061 SQ TUBE IS 6061, ADDED MISSING DIM R.25, CH'D DIM WAS 5X R.25 IS 6X R.25, CH'D B/O INFO WAS 6 X 6 X 1/4 WALL IS 1/4 X 2-5/8 X 5-7/8. **-67** CH'D DIM WAS LIMITS Ø.7895-.7915 IS LIMITS Ø.7895-.7915 ⌀ 2.837. **-105** CH'D QTY WAS 4 IS 2. **-69A** & **-69B** DELETED DIMS .225, .413. ADDED DIMS .938, .750. **-71** CH'D DIM WAS Ø1.425 +.000 -.002 IS Ø1.425 +.000 -.005. **-73** DELETED DIM 1.350. ADDED DIM .40. **-79** CH'D DIM WAS .188 IS (.188). **-87** CH'D DIM WAS 6.50 IS (6.50). **-106** & **-108** ADDED TO BOM. **-107** CH'D QTY WAS 9 IS 17. CH'D TOLERANCE ON NON-CRITICAL DIMENSIONS. **-129** CH'D DIM WAS Ø.375 IS (Ø.375). **-151** ADDED TO BOM & ADDED DRAWING.	9/30/2014	DPD	JAG

ASSY QTY	ASSY QTY	ASSY QTY	ASSY QTY	ASSY QTY	B/O	Part #	UNIT QTY	Description	Material	B/O INFORMATION OR SPECIFICATIONS	PG.
				X		-5	1	FRAME WELDMENT			3
			X	1		-6		TUBE WELDMENT			4
			1			-7		FRONT CROSSBAR	6061	3/16 WALL X 2-1/2 X 2-1/2 X 23-15/16	5
				1		-9		REAR CROSSBAR	6061	3/16 WALL X 2-1/2 X 2-1/2 X 19	6
				1		-11		LEG	6061	3/16 WALL X 2-1/2 X 2-1/2 X 58-1/2	7
				4		-13		REAR GUSSET	6061	3/16 X 3 X 8-1/8	8
				4		-15		FRONT GUSSET	6061	3/16 X 2-7/8 X 5-1/8	9
				1		-17		LEG	6061	3/16 WALL X 2-1/2 X 2-1/2 X 58-1/2	10
				2		-19		LEG	6061	3/16 WALL 2-1/2 X 2-1/2 X 5-1/8	11
				2		-21		UPRIGHT GUSSET	6061	3/16 WALL X 2-1/2 X 2-1/2 X 3-11/16	
			1			-23		RIGHT ANGLE PLATE	6061	3/8 X 10-1/4 X 20	13
			1			-25		LEFT ANGLE PLATE	6061	3/8 X 10-1/4 X 20	14
			1			-27		TUBE	6061	Ø3-1/4 X 1/4 X 10-1/4	15
			1			-29		FRAME TUBE	6061	Ø3-1/4 X 1/4 X 11-7/8	16
			1			-31		TONGUE GUSSET	6061	3/8 X 3-3/8 X 16-1/8	17
				2		-33		MOUNT PLATE	6061	3/16 X 2-1/4 X 2-1/2	18
			1			-35		BLOCK PAD	6061	1/8 X 3/4 X 1-1/2 X 4-1/8	19
				3		-37		RISER	6061	Ø3/4 X 7/8	20
					B/O	-39	2	RIVET NUT	STEEL	1/4-20 MCMASTER-CARR #98560A571	3
		X				-41	2	GUIDE WELDMENT			21
		1				-43		GUIDE PLATE	1018	.120 X 2 X 2-1/2	22
		2				-45		GUIDE	C.R. STEEL	14ga. X 1-3/16 X 2-1/2	23
				6		-48		WHEEL BRACKET	6061	1/4 X 3 X 8-5/8	24
				1		-54		R FRT. INSIDE WHEEL BRACKET	6061	1/4 X 2-5/8 X 5-7/8	25
				1		-56		L FRT. INSIDE WHEEL BRACKET	6061	1/4 X 2-5/8 X 5-7/8	26
	X					-59	2	PIN SLIDE WELDMENT			27
	1					-61		BUSHING	1018	Ø1/2 X 7/16	28
	1					-63		PIN ATTACHMENT	1018	Ø1-3/4 X 1	29
	1					-65		SLIDE BAR	1018	3/16 X 1-1/4 X 4-3/8	30
X						-67	2	PIN HOUSING WELDMENT			31
1						-69A		HOUSING PLATE	1018	14 ga X 2-1/2 X 2-1/2	32
						-69B	2	HOUSING PLATE	1018	14 ga. 2-1/2 X 2-1/2	32
1						-71		PIN HOUSING	1018	Ø1-1/2 X 3-5/8	33
						-73	1	BELL CRANK	6061	3/16 X 3-1/4 X 3-7/8	34
						-75	1	CABLE BOLT	12L14	Ø3/4 X 4-5/8	35
						-77	1	TRANSFER BAR (RIGHT)	6061	3/6 X 1-3/16 X 12-3/16	36
						-79	1	TRANSFER BAR (LEFT)	6061	3/16 X 1-3/16 X 12-3/16	37
						-81	2	SLIDE LINKAGE ROD	12L14	Ø1/4 X 7-1/16	38
					B/O	-83	1	PAD	URETHANE 60A	1-1/2 X 1-1/2 X 4-1/8 MCMASTER CARR #8644K24	39
						-85	2	PIN	4140	Ø1 X 5-5/8	40
						-87	1	TONGUE SHEER BOLT HOLDER	6061	3/4 X 3/4 X 7-1/8	41
						-89	7	TONGUE SHEAR BOLT		REDBARN #RBW0905G01652-3G	1
ASSY -67	ASSY -59	ASSY -41	ASSY -6	ASSY -5							

ASSY QTY	ASSY QTY	ASSY QTY	ASSY QTY	ASSY QTY	B/O	Part #	UNIT QTY	Description	Material	B/O INFORMATION OR SPECIFICATIONS	PG.
					B/O	-95	5	HEX HEAD CAP SCREW	STEEL	1/4-28 UNF X 1/2 MCMASTER-CARR #92620A562	1
					B/O	-97	4	HEX HEAD CAP SCREW	STEEL	1/4-28 UNF X 3/4 MCMASTER-CARR #92620A563	1
					B/O	-99	8	HEX HEAD CAP SCREW	STEEL	1/4-28 UNF X 3-1/4 MCMASTER-CARR #91257A574	1
					B/O	-101	24	FLAT WASHER	STEEL	Ø1/4 MCMASTER-CARR #94744A240	1
					B/O	-103	10	HEX LOCKNUT	STEEL	1/4-28 UNF MCMASTER-CARR #95615A130	1
					B/O	-105	2	HEX HEAD CAP SCREW	STEEL	3/8-24 UNF X 3-19/32 AIRCRAFT SPRUCE #AN6-34A	1
					B/O	-106	2	HEX HEAD CAP SCREW	STEEL	3/8-24 UNF X 3-3/32 AIRCRAFT SPRUCE #AN6-30A	1
					B/O	-107	17	FLAT WASHER	STEEL	Ø3/8 MCMASTER-CARR #94744A265	1
					B/O	-108	4	UNTHREADED SPACER	BRASS	Ø3/4 O.D. X 3/8 MCMASTER-CARR #90309A523	1
					B/O	-109	12	NYLON INSERT LOCKNUT	STEEL	3/8-24 UNF MCMASTER-CARR #97135A235	1
					B/O	-111	2	SOCKET HEAD CAP SCREW	STEEL	1/4-28 UNF X 3/4 MCMASTER-CARR #92562A588	1
					B/O	-113	2	SOCKET HEAD CAP SCREW	STEEL	1/4-20 UNC X 1-1/8 MCMASTER-CARR #91251A560	1
					B/O	-115	4	FLAT HEAD SCREW	STEEL	1/4-28 UNF X 1/2 MCMASTER-CARR #90273A557	1
					B/O	-117	5	CLEVIS ROD END	STEEL	1/4-28 UNF X 2 MCMASTER-CARR #6071K120	1
					B/O	-119	2	PULL HANDLE	STEEL	1 X 2-1/16 X 6-5/16 MCMASTER-CARR #1973A100	1
					B/O	-121	4	CASTER WHEEL	POYURETHANE	Ø4 X 1-1/4 MSC #65366338	1
					B/O	-123	2	L-HANDLE BALL LOCK PIN	S.S.	Ø5/16 X 3-1/4 CARR-LANE #CL-5-BLPL-3.50-S-C	1
					B/O	-125	3	PAN HEAD SCREW	STEEL	10-32 X 3/8 MCMASTER-CARR #96880A513	1
					B/O	-127	2	LANYARD	NYLON COATED STEEL	12" CABLE MCMASTER-CARR #30345T24	1
						-129	5	SLEEVE	BRONZE	1/4 I.D. X 3/8 O.D. X 1/4 MCMASTER-CARR #1688K4 (MOD.)	42
					B/O	-131	2	ROLL PIN	STEEL	Ø1/8 X 3/4 MCMASTER-CARR #90692A698	1
					B/O	-133	1	LOOP CLAMP	ALUMINUM	Ø1/2 OD MCMASTER-CARR #3177T12	1
					B/O	-135	2	WASHER	STEEL	Ø1/4 MCMASTER-CARR #91090A107	39
					B/O	-137	2	COMPRESSION SPRING	SPRING STEEL	OD Ø3/4 X 2 CENTURY SPRING #10735	1
					B/O	-139	1	CABLE ASSEMBLY		CABLECRAFT #CA292-3-UT-1-45	1
					B/O	-141	2	HEX HEAD CAP SCREW	STEEL	14-28 UNF X 3-3/4 MCMASTER-CARR #91247A027	1
					B/O	-147	1	DART PLACARD	ALUMINUM	1/32 X 2-1/8 X 3-3/8	
					B/O	-149	4	#2 DRIVE SCREW	COATED STEEL	1/8 MCMASTER-CARR #90081A074	
					B/O	-151	1	WARNING STICKER WITH ADHESIVE BACK	VINYL	SIGNS NOW	
ASSY -67	ASSY -59	ASSY -41	ASSY -6	ASSY -5							

DART AEROSPACE

TITLE: TOW BAR, (FLIR)

DWG NO.: RBW0905G10331-3G-03 REV: 2

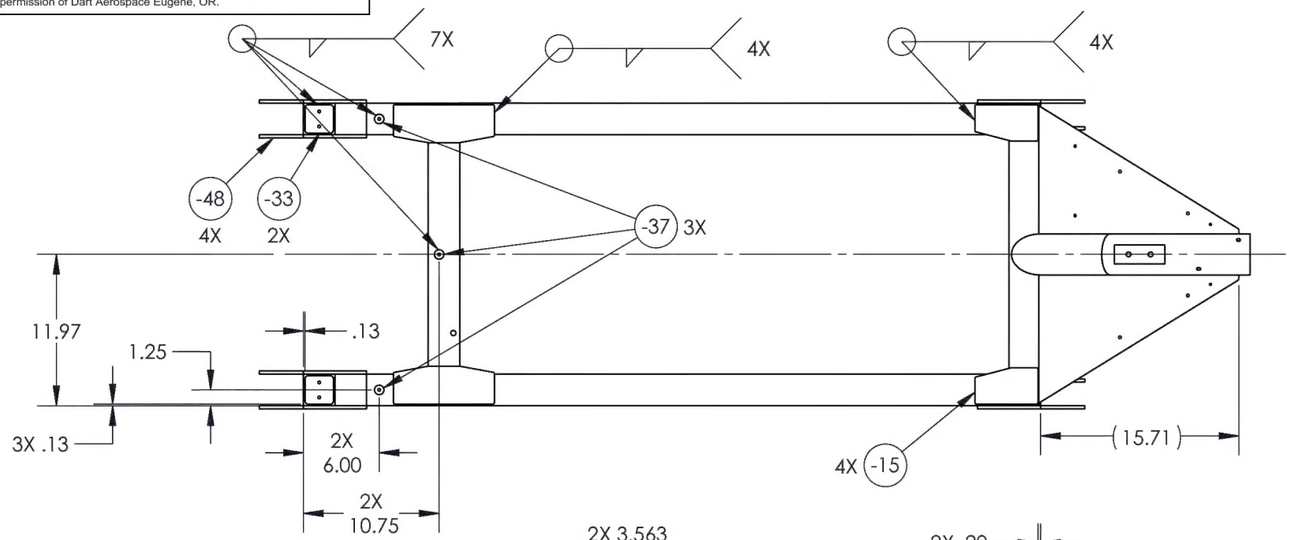
MAT'L

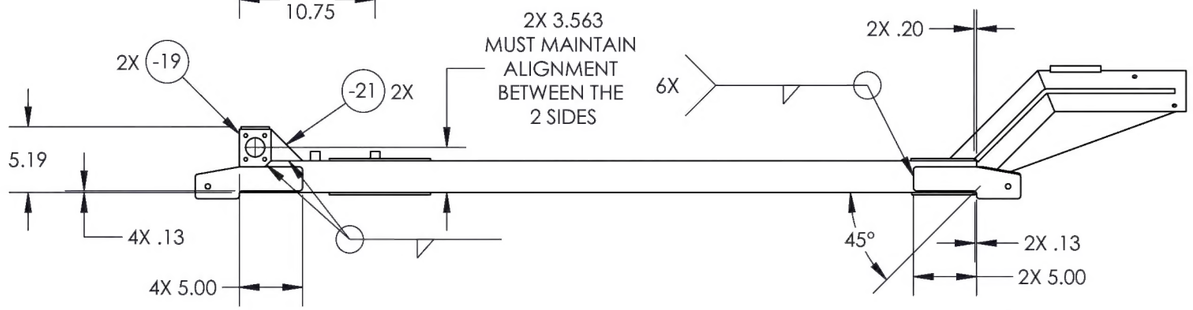
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .005 FRACTIONS ± 1/8
.XX ± .01 ANGLES ±.5°
.X ± .1
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

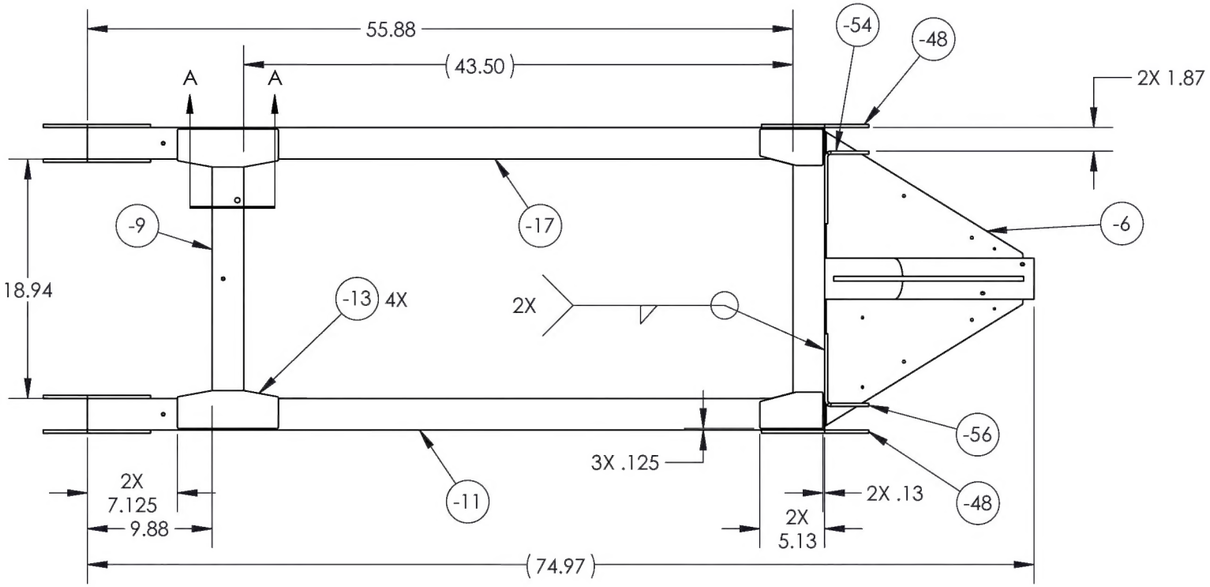
DRAWN BY: CLOUGH
APPROVED: D Weil
HEAT TREAT
FINISH
SPEC
USED ON MODEL: AW139
SCALE: 1:12 DATE: 11/28/2012

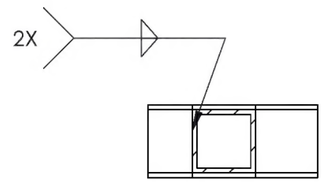
REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-5** DELETED -7, -23, -25, -27, -29 & -31 FROM -5 WELDMENT & ADDED -6 WELDMENT. ADDED NEW DEIGN WHEEL BRACKETS -48, -54 & -56.	1/25/2013	RJC	SE
2	14-0167	**-5** CH'D SPACING FOR -54 & -56 FRONT INSIDE WHEEL BRACKETS & ADDED DIM, WAS 2.500 IS 1.87. REMOVED -35 & -39 FROM WELDMENT.	9/30/2014	DPD	JAG

SEE ATTACHED DEVIATION

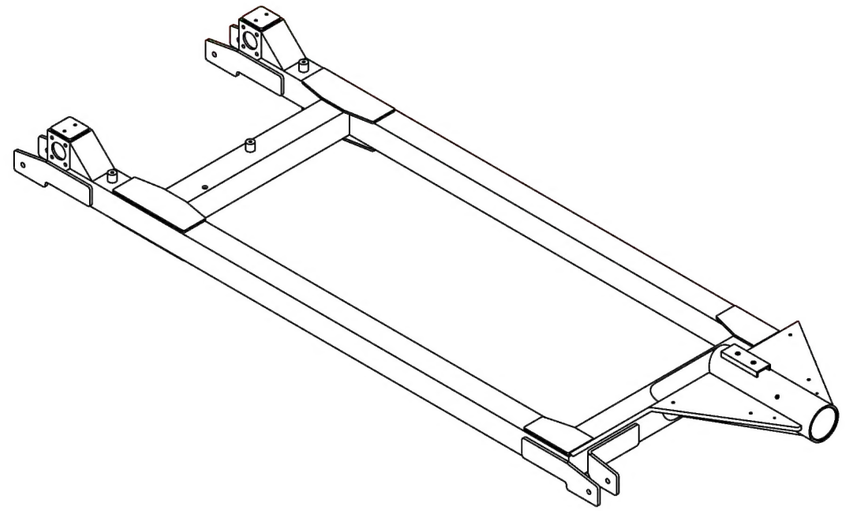








SECTION A-A
SCALE 1 : 6



-5

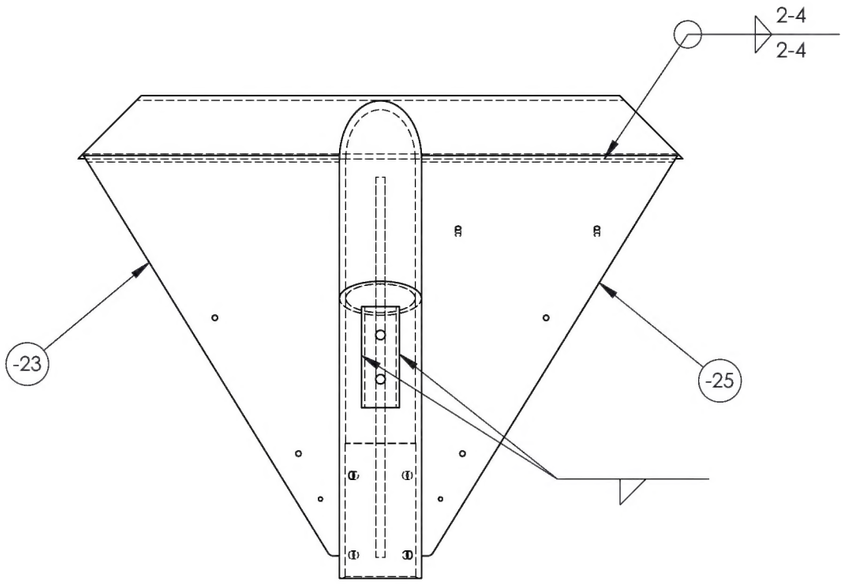
FRAME WELDMENT

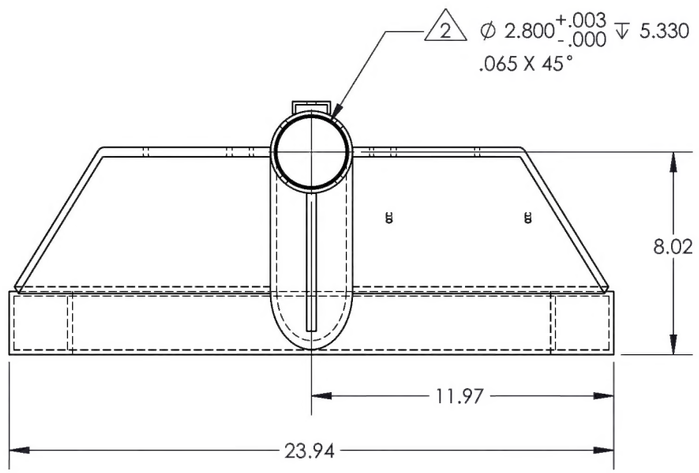
DART AEROSPACE

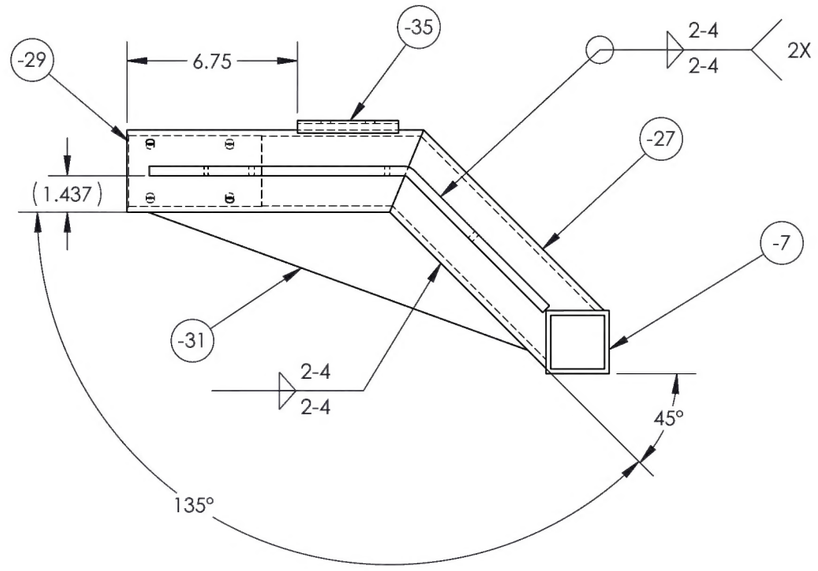
TITLE	TOW BAR, (FLIR)	
DWG NO.	RBW0905G10331-3G-03-5	REV 2
MAT'L		DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING		APPROVED D Weil
		HEAT TREAT
		FINISH POWDER COAT YELLOW
		SPEC FED # 13538
		USED ON MODEL AW139
SCALE 1:12	DATE 11/19/2012	SHEET 3 OF 43

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		-6 ADDED WELDMENT.	1/25/2013	RJC	SE
2	14-0167	-6 ADDED -35 TO WELDMENT.	9/30/2014	DPD	JAG

SEE ATTACHED DEVIATION







NOTE:
1. WELD -7, -23, -25,-27, -29, AND -31 TOGETHER.
2. BORE AFTER WELDING.

-6

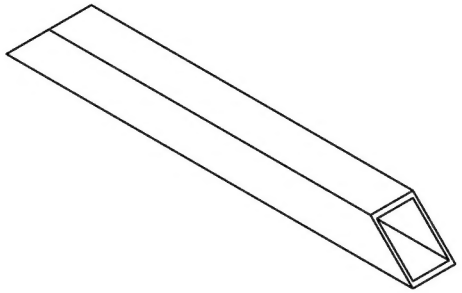
TUBE WELDMENT

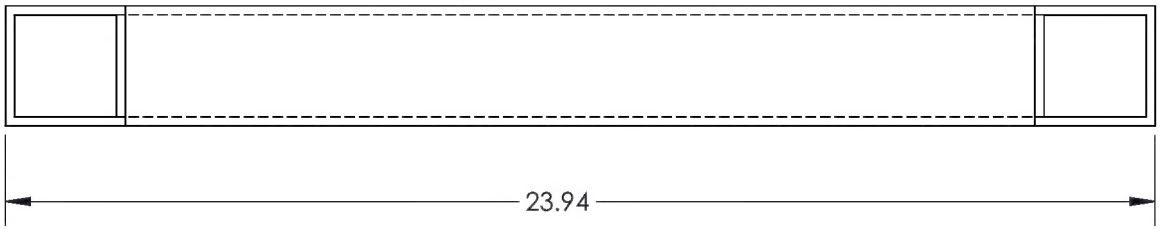
DART AEROSPACE

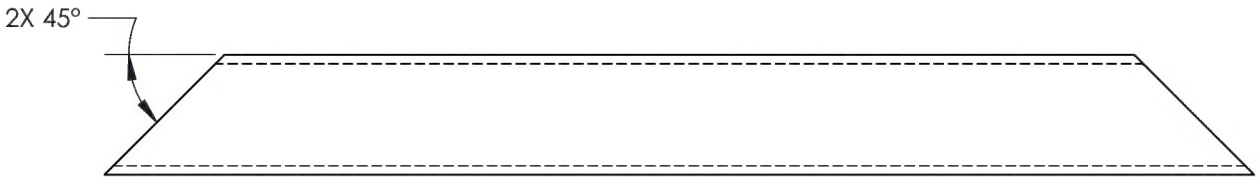
TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-6
REV	2
MAT'L	
DRAWN BY:	CLOUGH
APPROVED	D Weil
HEAT TREAT	
FINISH	SEE -5 WELDMENT
SPEC	
USED ON MODEL	AW139
SCALE	1:6
DATE	1/22/2013
SHEET	4 OF 43

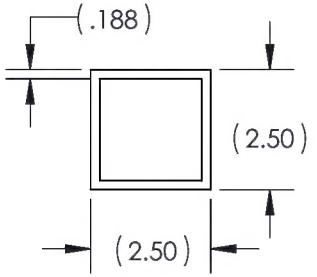
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .005 FRACTIONS ± 1/8
.XX ± .01 ANGLES ±.5°
.X ± .1
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-7** DELETED 2X Ø.266 HOLES & 2X 1/4-28 HOLES, NO LONGER NEEDED WITH NEW DESIGN OF WHEEL BRACKETS.	1/18/2013	RJC	SE









SEE ATTACHED DEVIATION

-7

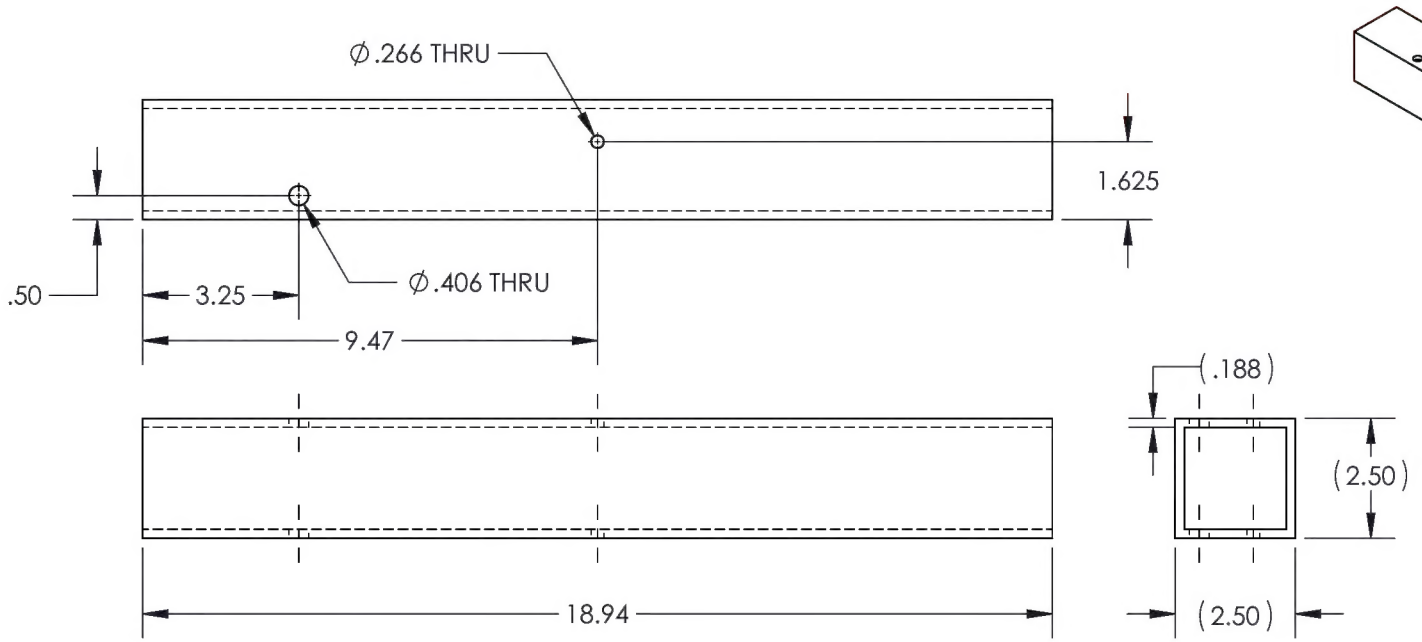
FRONT CROSSBAR

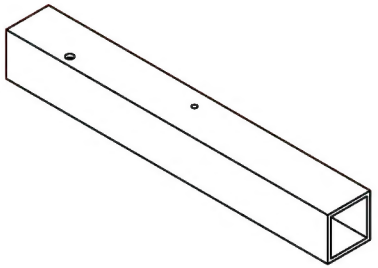
DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-7
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -5 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:4	DATE 11/19/2012
SHEET 5 OF 43	

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-9** CH'D Ø.397 THRU HOLE LOCATION FROM .450 TO .500.	1/25/2013	RJC	SE

SEE ATTACHED DEVIATION





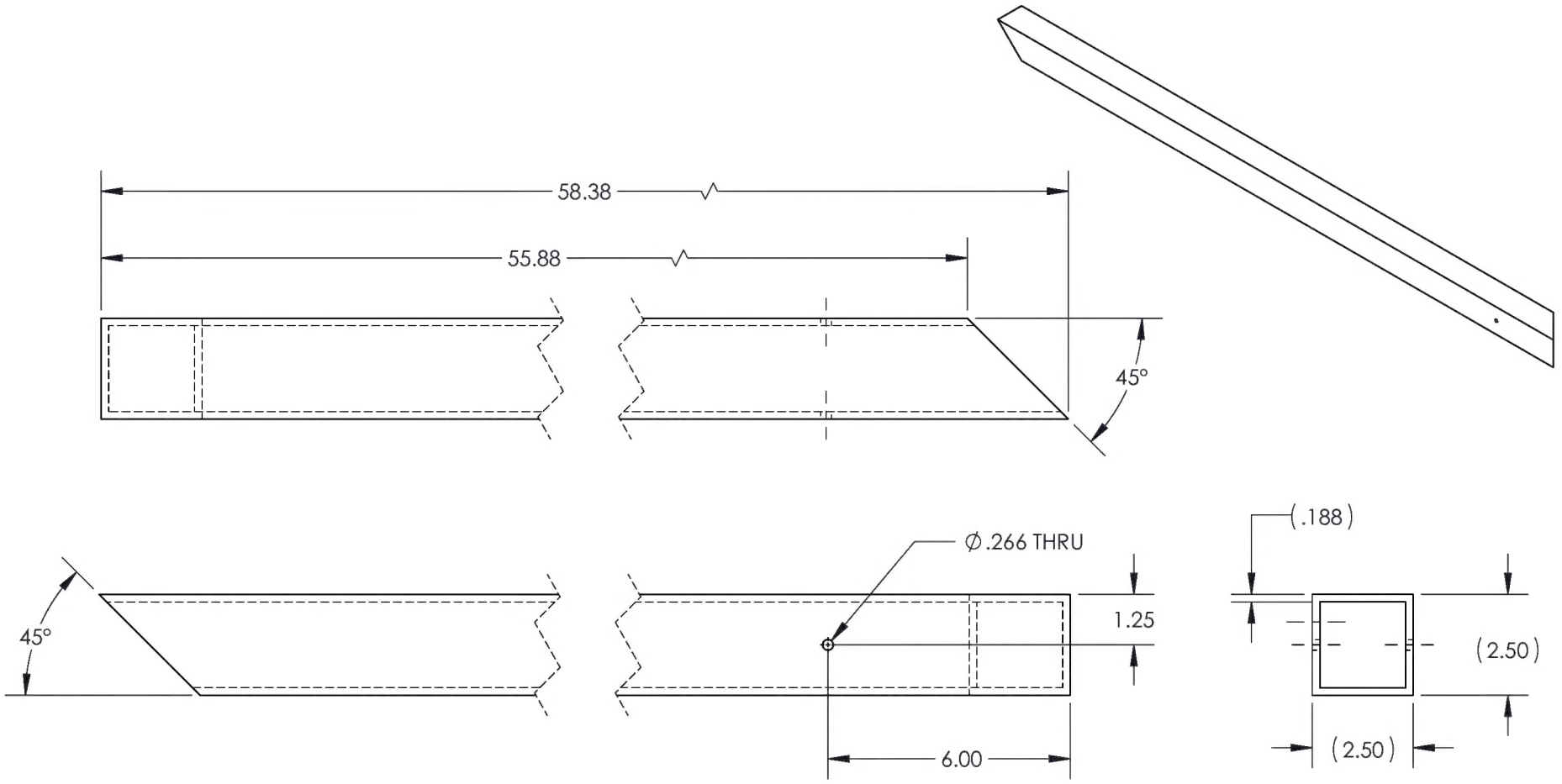
-9

REAR CROSSBAR

DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-9
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -5 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:4	DATE 11/19/2012
SHEET 6 OF 43	

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-11** DELETED Ø.266 THRU HOLES THAT WERE USED FOR FRONT (-53) & REAR (-47) WHEEL BRACKETS.	1/18/2013	RJC	SE



SEE ATTACHED DEVIATION

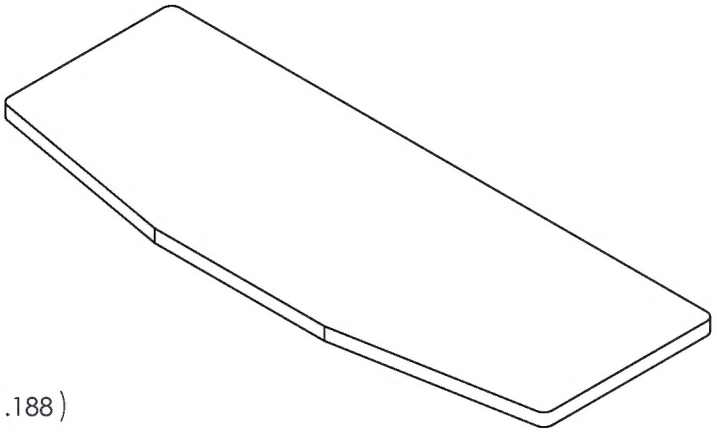
(-11)

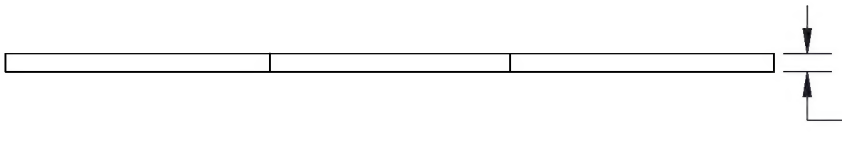
LEG

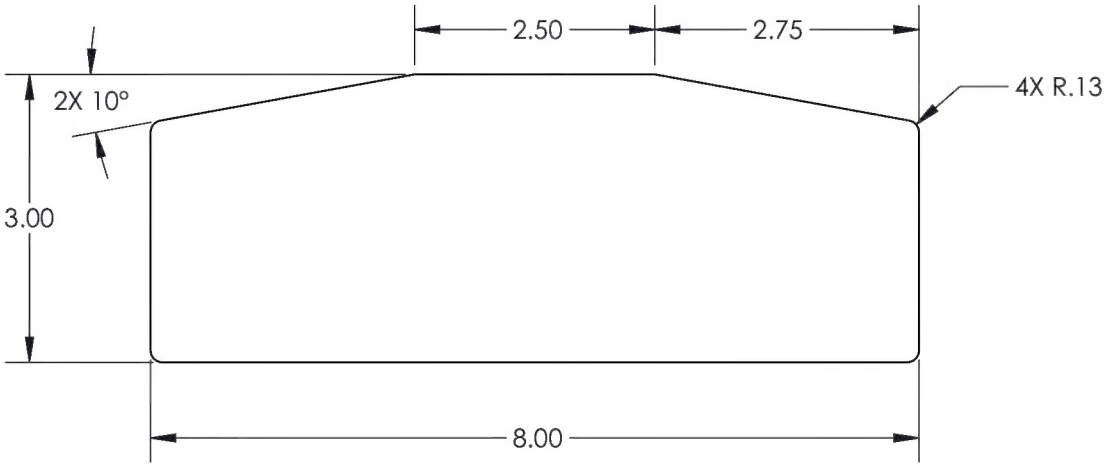
DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-11
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -5 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:4	DATE 11/19/2012
SHEET 7 OF 43	

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED







SEE ATTACHED DEVIATION

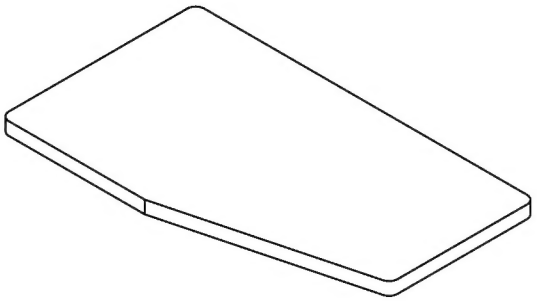
-13

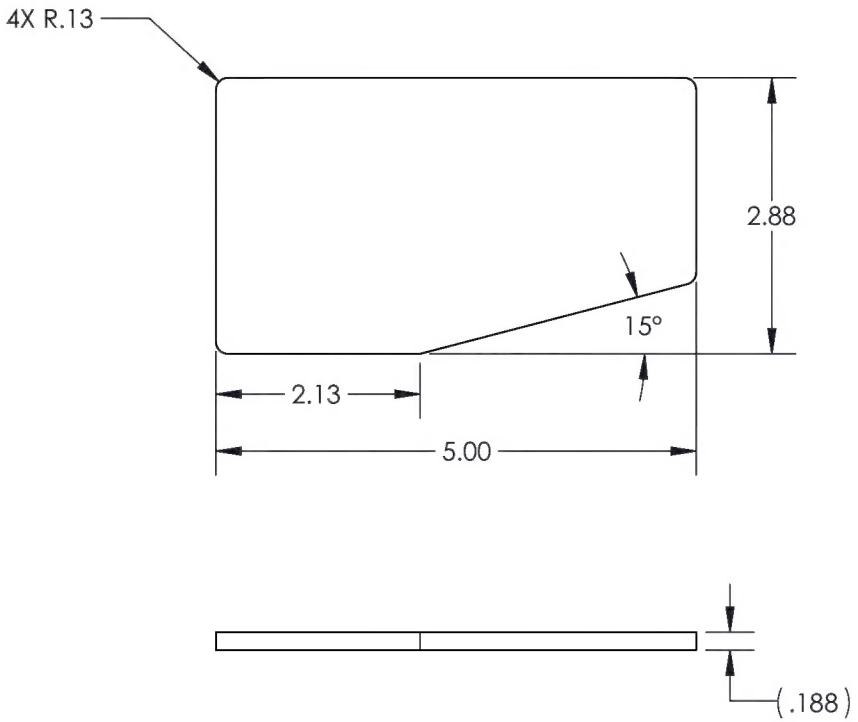
REAR GUSSET

DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-13
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .010 FRACTIONS ± 1/8 .XX ± .03 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -5 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:2	DATE 11/19/2012
SHEET 8 OF 43	

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-15** DELETED TABLE FOR -15A & -15B CONFIGURATIONS, REDESIGNED WHEEL BRACKETS, DELETED THREADED HOLES NOT NEEDED.	1/18/2013	RJC	SE





SEE ATTACHED DEVIATION

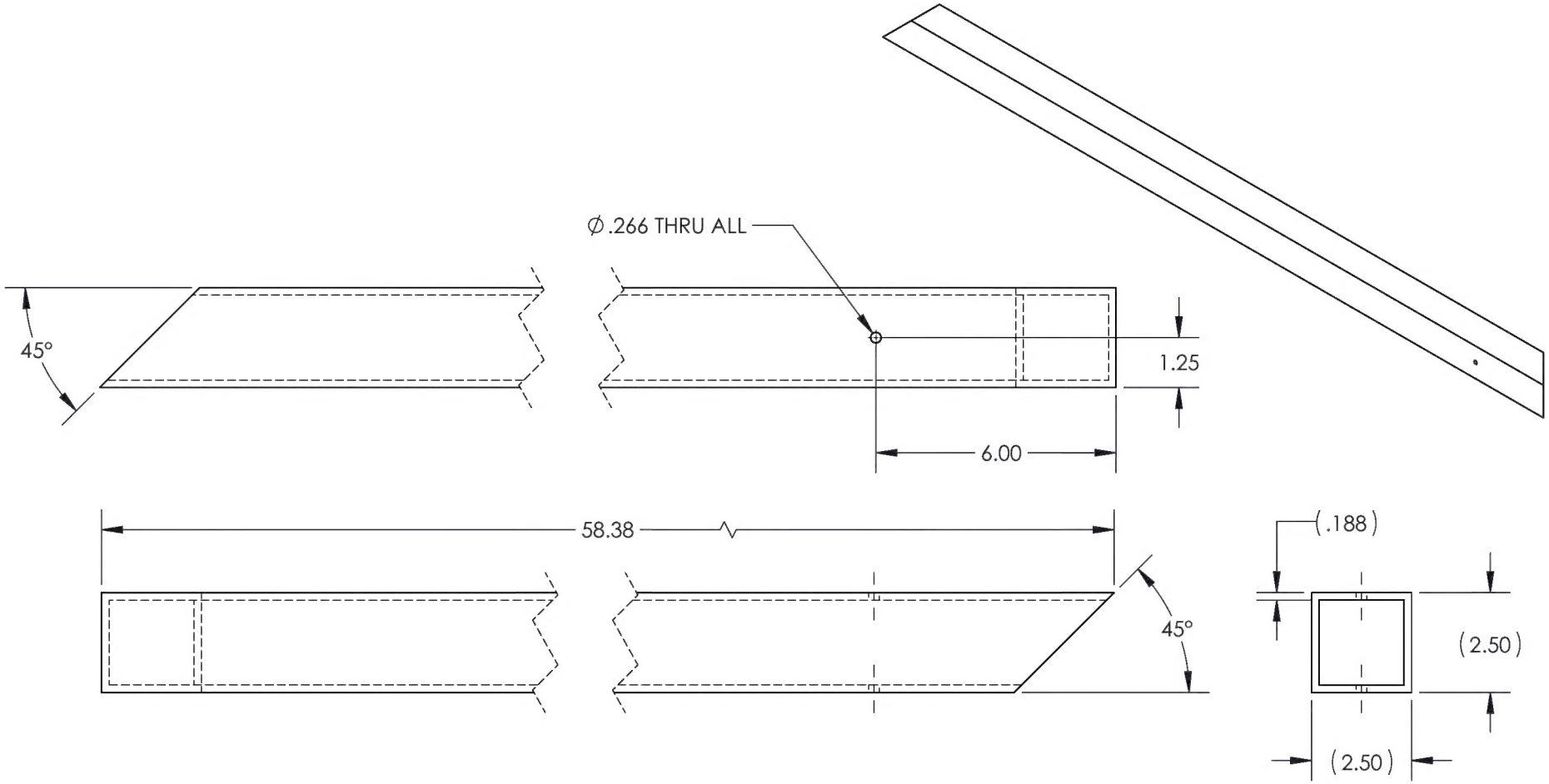
(-15)

FRONT GUSSET

DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-15
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .010 FRACTIONS ± 1/8 .XX ± .03 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -5 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:2	DATE 11/19/2012
SHEET 9 OF 43	

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-17** DELETED Ø.266 THRU HOLES THAT WERE USED FOR REAR WHEEL BRACKET -47.	1/18/2013	RJC	SE



SEE ATTACHED DEVIATION

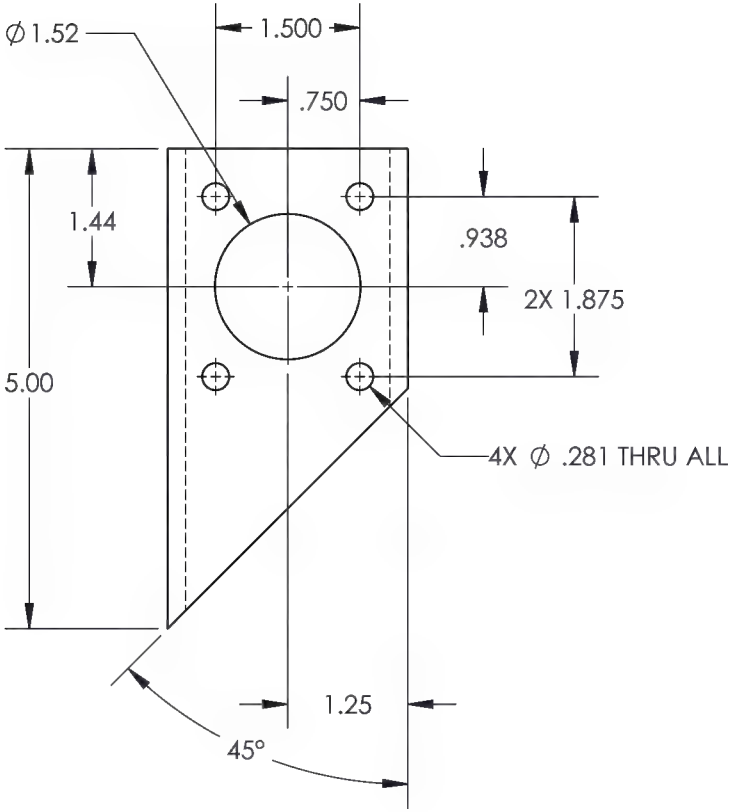
-17

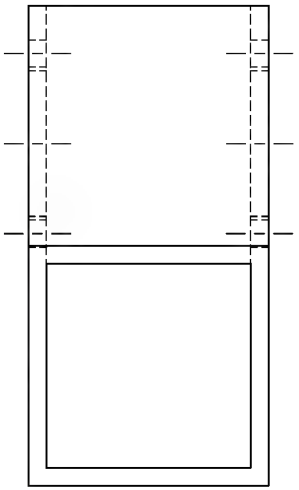
LEG

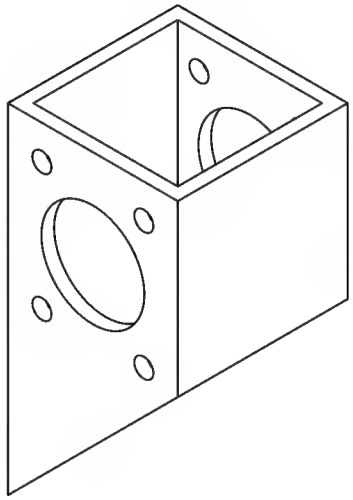
DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-17
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -5 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:4	DATE 11/19/2012
SHEET 10 OF 43	

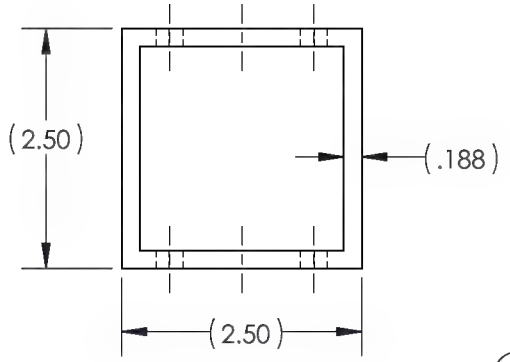
REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-19** DELETED 2X 1/4-28 HOLES, CH'D HOLE CLEARANCE FROM 4X Ø.257 TO Ø.281.	1/18/2013	RJC	SE







SEE ATTACHED DEVIATION



-19

LEG

DART AEROSPACE

TITLE: TOW BAR, (FLIR)

DWG NO. RBW0905G10331-3G-03-19 REV 2

MAT'L 6061

DRAWN BY: CLOUGH

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .005 FRACTIONS ± 1/8
.XX ± .01 ANGLES ±.5°
.X ± .1
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

APPROVED D Weil

HEAT TREAT

FINISH SEE -5 WELDMENT

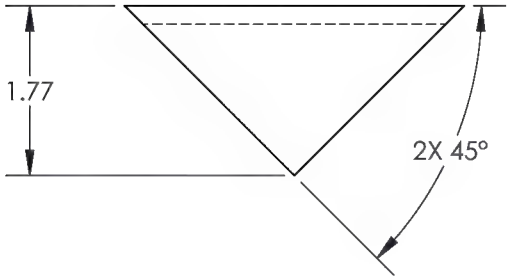
SPEC

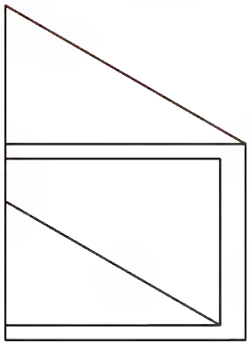
USED ON MODEL AW139

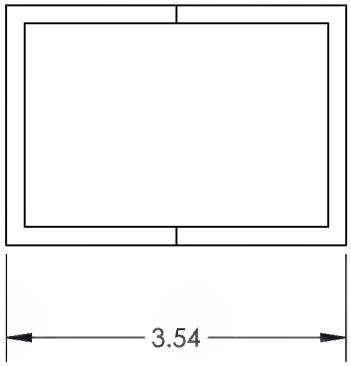
SCALE 1:2 DATE 11/19/2012 SHEET 11 OF 43

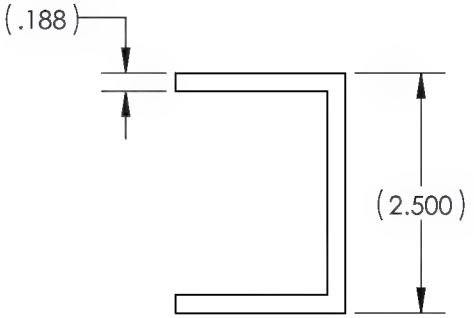
REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED

SEE ATTACHED DEVIATION









-21

UPRIGHT GUSSET

DART AEROSPACE

TITLE: TOW BAR,(FLIR)

DWG NO. RBW0905G10331-3G-21 REV 2

MAT'L 6061

DRAWN BY:

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .005 FRACTIONS ± 1/8
.XX ± .01 ANGLES ±.5°
.X ± .1

1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

APPROVED D Weil

HEAT TREAT

FINISH

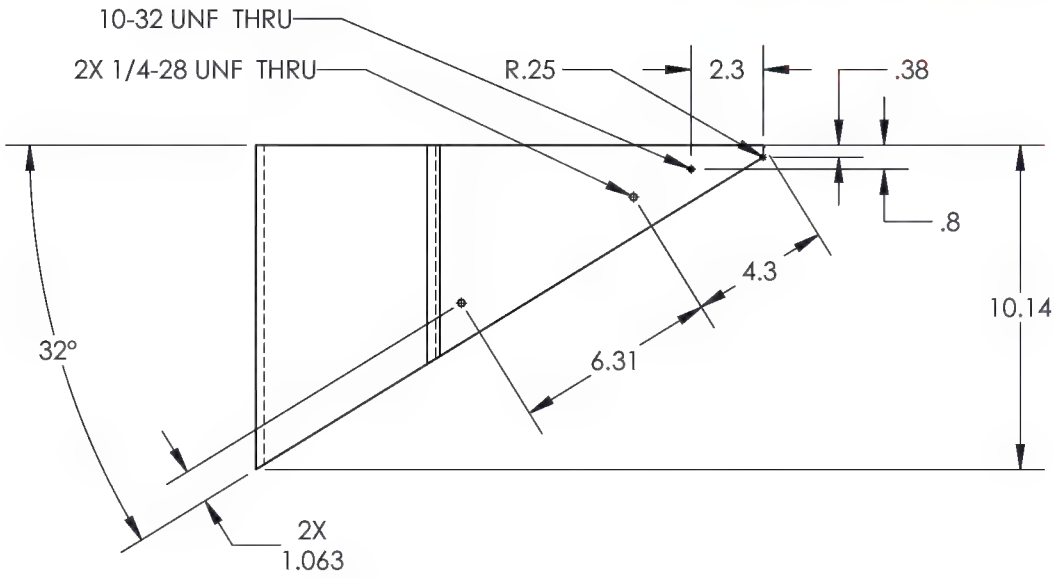
SPEC

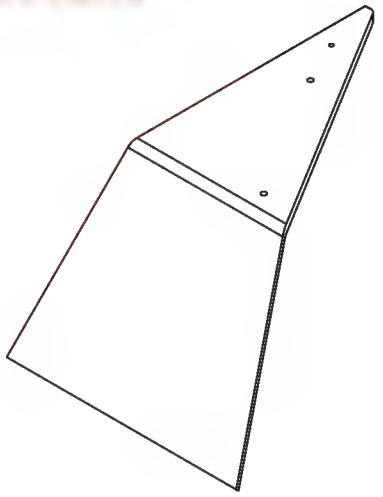
USED ON MODEL: AW139

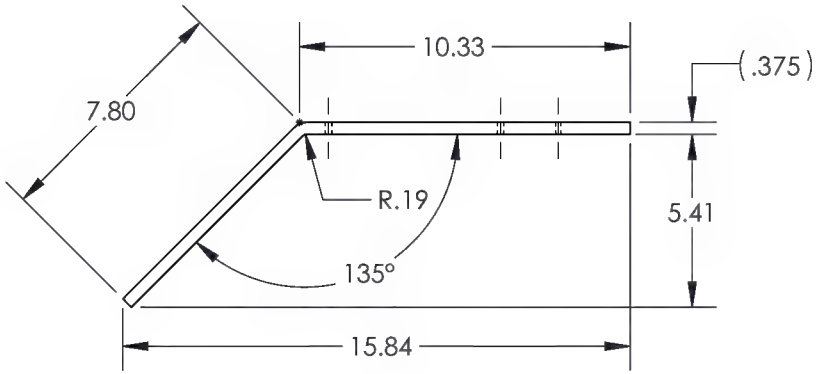
SCALE 1:2 DATE

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-23** DELETED 45° ANGLE FROM BOTTOM OF PART.	1/22/2013	RJC	SE
2	14-0167	**-23** DELETED DIMS 9.421, 4.047, 1.623, 4.933. CH'D DIMS WAS (4.30) IS 4.30, WAS (6.313) IS 6.313, WAS (2X 1.063) IS 2X 1.063.	10/22/2014	DPD	JAG

SEE ATTACHED DEVIATION







(-23)

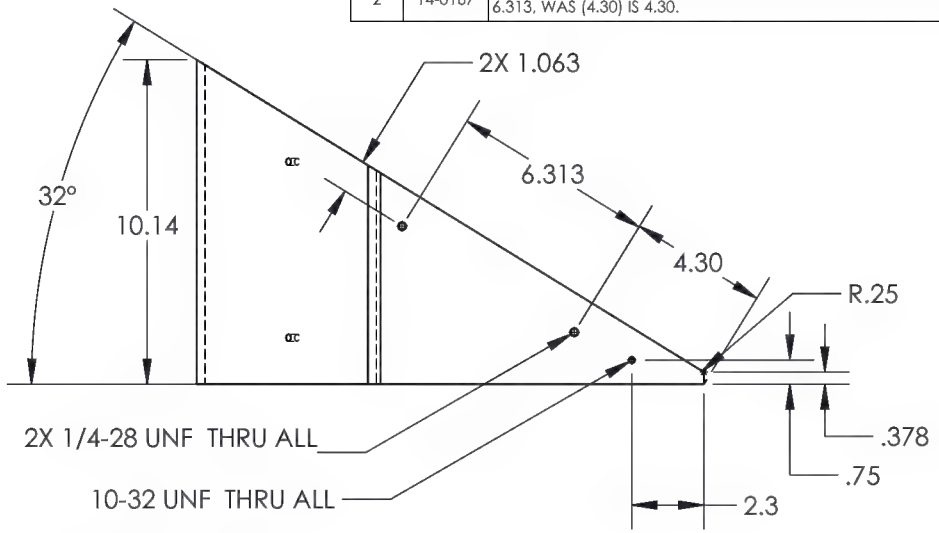
RIGHT ANGLE PLATE

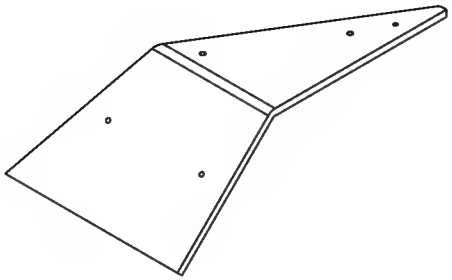
DART AEROSPACE

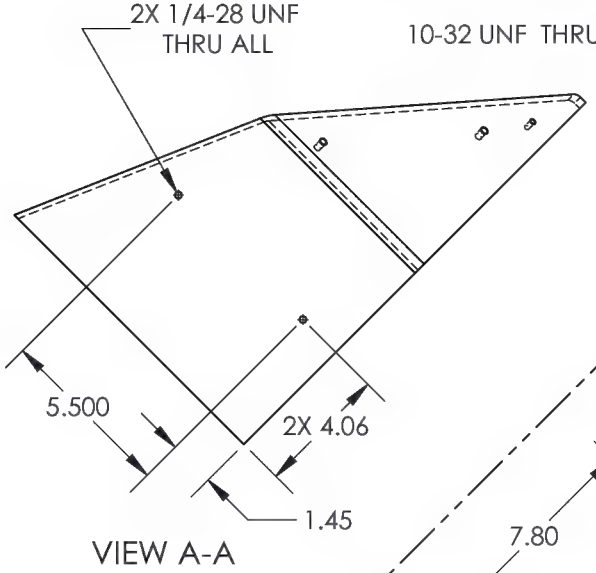
TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-23
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .010 FRACTIONS ± 1/8 .XX ± .03 ANGLES ±.5° .X ± .1	APPROVED D Weil
	HEAT TREAT
	FINISH SEE -5 WELDMENT
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R	SPEC
2. DIMENSIONAL LIMITS APPLY AFTER PLATING	USED ON MODEL AW139
SCALE 1:6	DATE 11/19/2012
	SHEET 13 OF 43

REVISIONS

REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-25** DELETED 45° ANGLE FROM BOTTOM OF PART.	1/22/2013	RJC	SE
2	14-0167	**-25** DELETED DIMS 4.933, 1.623, 4.047, 9.421. CH'D DIMS WAS (2X 1.063) IS 2X 1.063, WAS (6.313) IS 6.313, WAS (4.30) IS 4.30.	10/22/2014	DPD	JAG

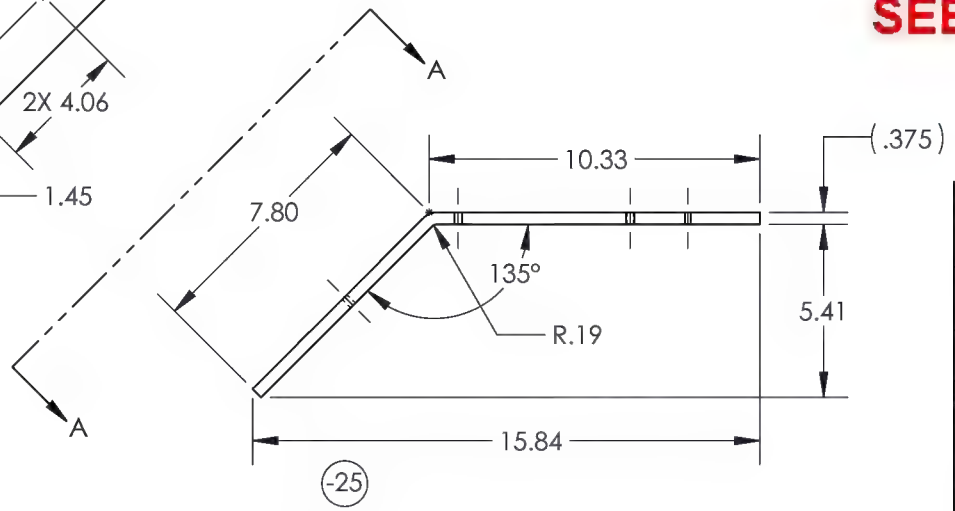






VIEW A-A

SEE ATTACHED DEVIATION

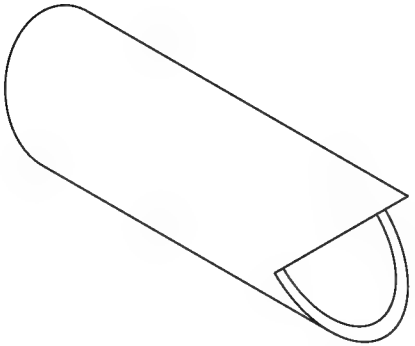


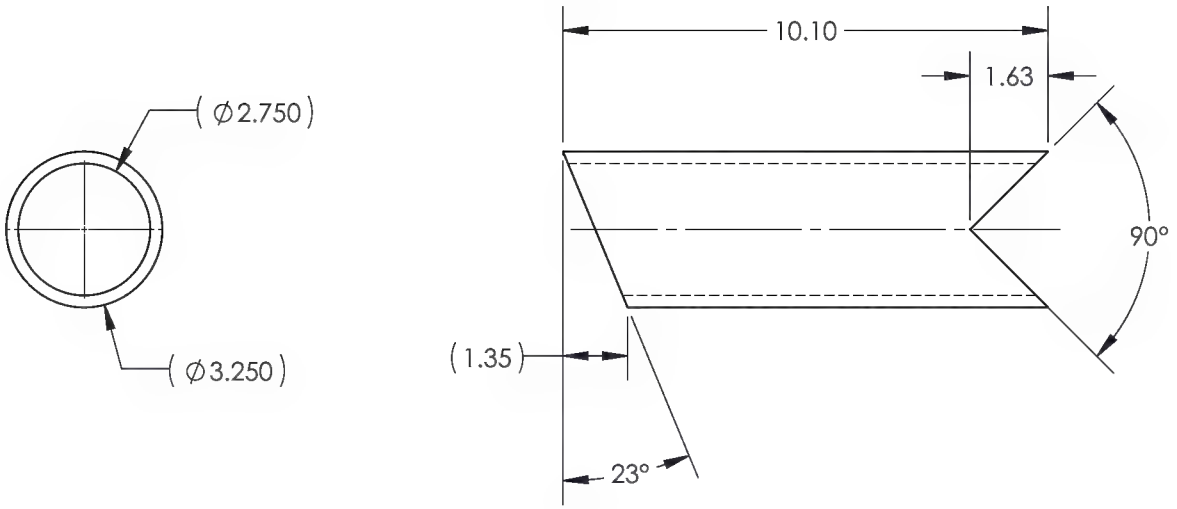
LEFT ANGLE PLATE

DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-25
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .010 FRACTIONS ± 1/8 .XX ± .03 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -5 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:6	DATE 11/19/2012
	SHEET 14 OF 43

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED





SEE ATTACHED DEVIATION

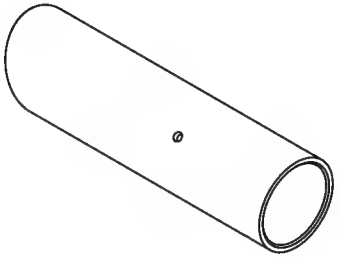
-27

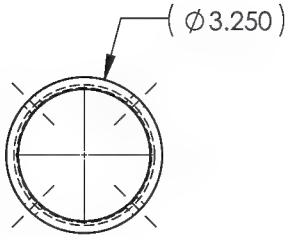
TUBE

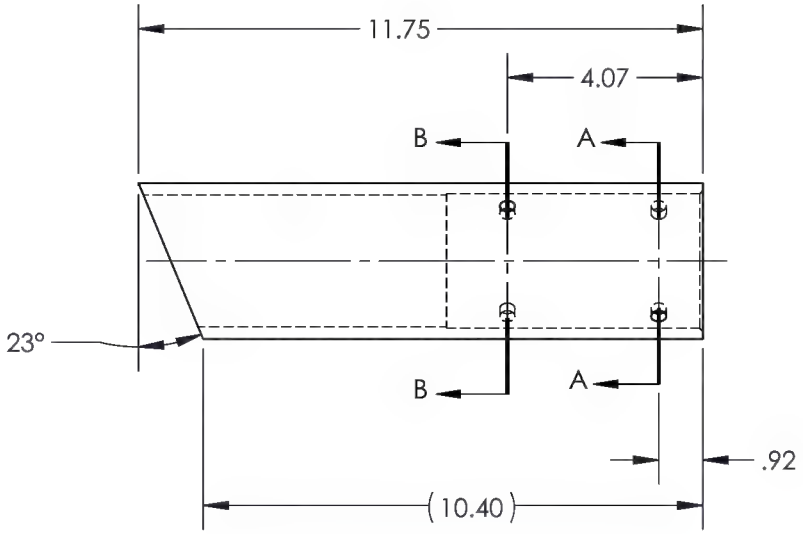
DART AEROSPACE

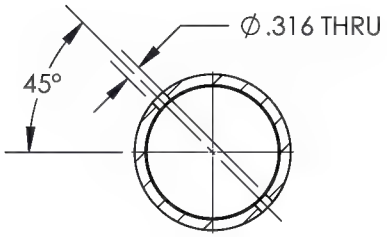
TITLE	TOW BAR, (FLIR)		
DWG NO.	RBW0905G10331-3G-03-27	REV	2
MAT'L 6061		DRAWN BY:	CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING		APPROVED	D Weil
		HEAT TREAT	
		FINISH	SEE -5 WELDMENT
		SPEC	
		USED ON MODEL	AW139
SCALE 1:6	DATE 11/19/2012	SHEET 15 OF 43	

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-29** CH'D ID FROM Ø(2.750) TO Ø2.800 +.0025-.0000 ↧5.330 TO BE BORED AFTER WELD. FLIPPED SECTION B-B VIEW, ADDED DETAIL C.	1/18/2013	RJC	SE

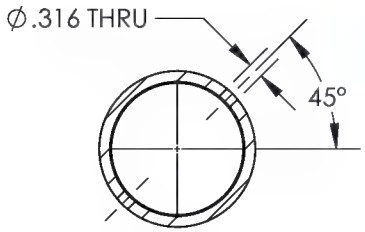








SECTION B-B
SCALE 1 : 4



SECTION A-A
SCALE 1 : 4

SEE ATTACHED DEVIATION

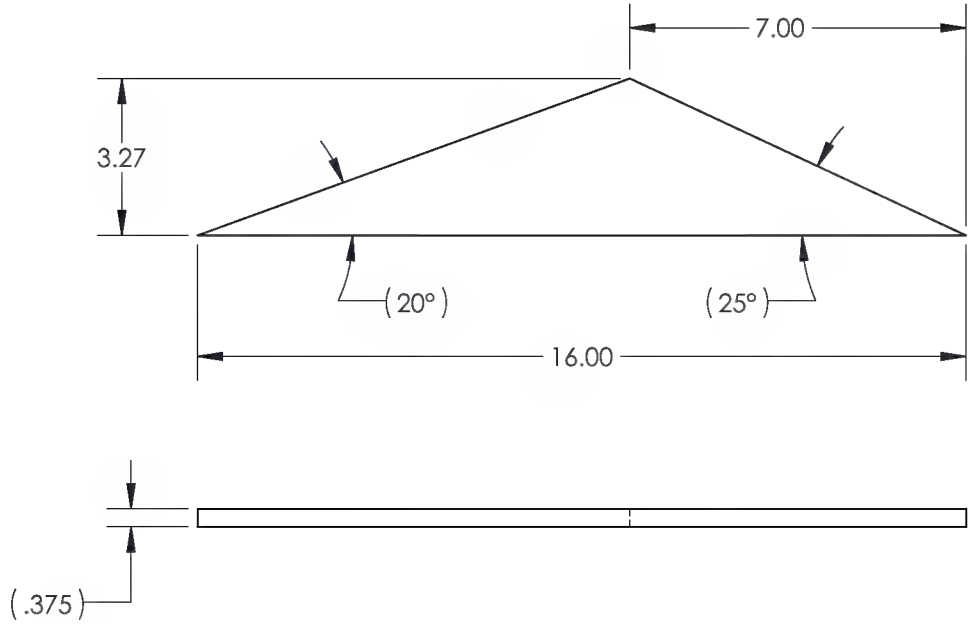
(-29)

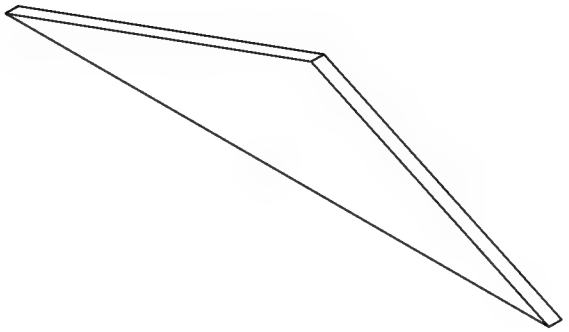
FRAME TUBE

DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-29
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -5 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:6	DATE 11/19/2012
SHEET 16 OF 43	

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED





SEE ATTACHED DEVIATION

-31

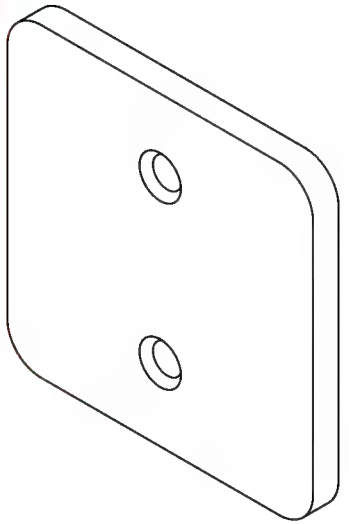
TONGUE GUSSET

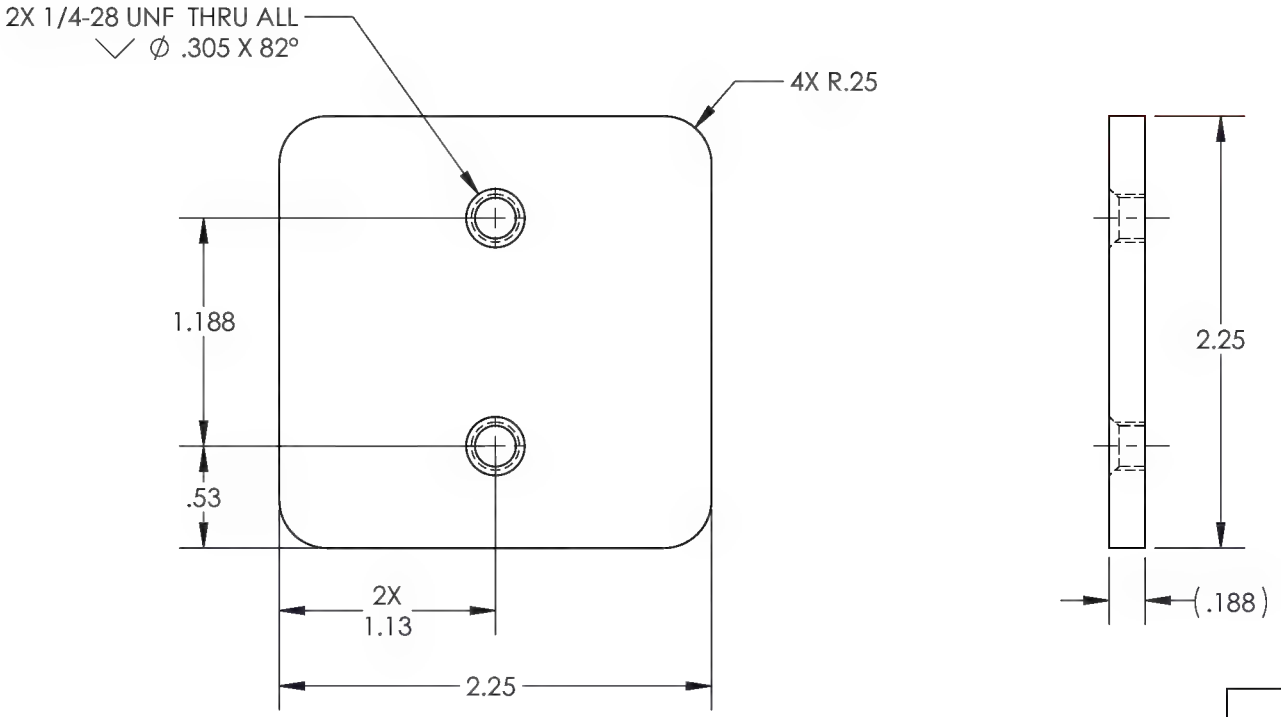
DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-31
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .010 FRACTIONS ± 1/8 .XX ± .03 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -5 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:4	DATE 11/19/2012
SHEET 17 OF 43	

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-33** ADDED COUNTERSINK TO 1/4-28 UNF HOLE CALLOUT.	1/23/2013	RJC	SE

SEE ATTACHED DEVIATION





-33

MOUNT PLATE

DART AEROSPACE

TITLE: TOW BAR, (FLIR)

DWG NO. RBW0905G10331-3G-03-33 REV 2

MAT'L 6061

DRAWN BY: CLOUGH

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .010 FRACTIONS ± 1/8
.XX ± .03 ANGLES ±.5°
.X ± .1
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

APPROVED D Weil

HEAT TREAT

FINISH SEE -5 WELDMENT

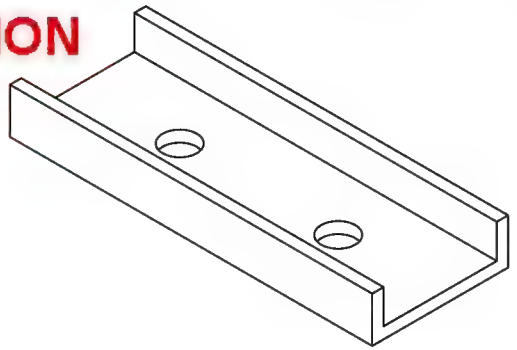
SPEC

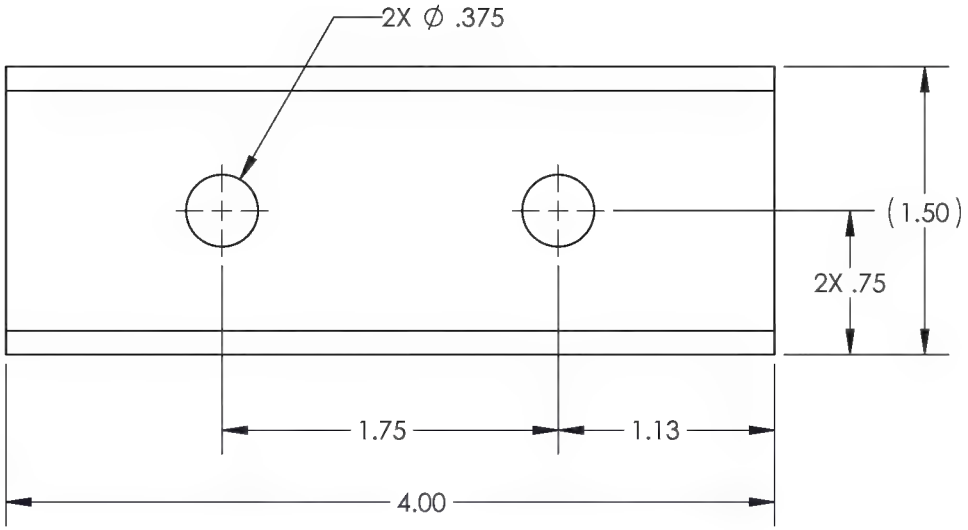
USED ON MODEL AW139

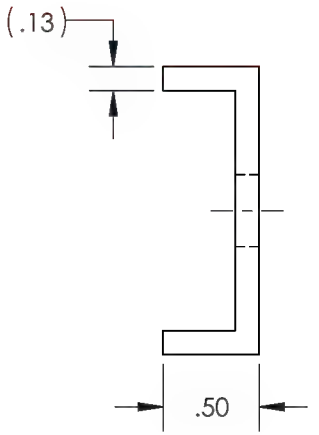
SCALE 1:1 DATE 11/19/2012 SHEET 18 OF 43

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-35** CH'D HOLE FROM 2X Ø.266 TO .375.	1/18/2013	RJC	SE
2	14-0167	**-35** CH'D DIMS WAS 1.50 IS (1.50), WAS .13 IS (.13).	10/22/2014	DPD	JAG

SEE ATTACHED DEVIATION







-35

BLOCK PAD

DART AEROSPACE

TITLE: TOW BAR, (FLIR)

DWG NO. RBW0905G10331-3G-03-35 REV 2

MAT'L 6061

DRAWN BY: CLOUGH

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .010 FRACTIONS ± 1/8
.XX ± .03 ANGLES ±.5°
.X ± .1

1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

APPROVED D Weil

HEAT TREAT

FINISH SEE -5 WELDMENT

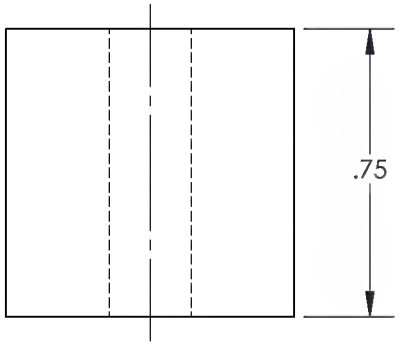
SPEC

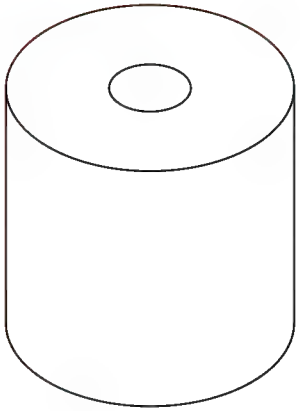
USED ON MODEL AW139

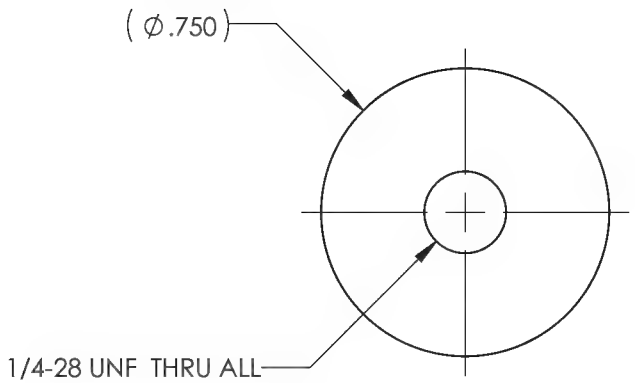
SCALE 1:1 DATE 11/19/2012 SHEET 19 OF 43

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED

SEE ATTACHED DEVIATION







(-37)

RISER

DART AEROSPACE

TITLE: TOW BAR, (FLIR)

DWG NO. RBW0905G10331-3G-03-37 REV 2

MAT'L 6061

DRAWN BY: CLOUGH

APPROVED D Weil

HEAT TREAT

FINISH SEE -5 WELDMENT

SPEC

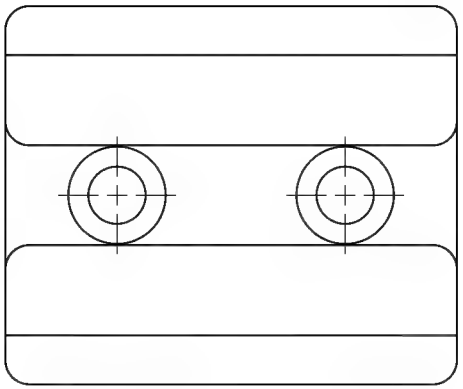
USED ON MODEL AW139

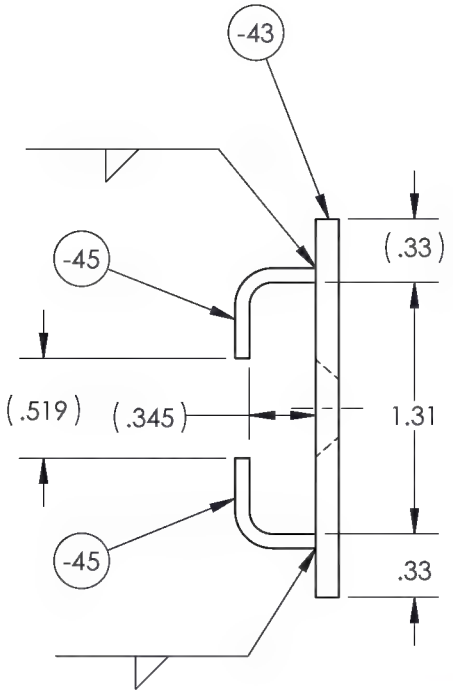
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .005 FRACTIONS ± 1/8
.XX ± .01 ANGLES ±.5°
.X ± .1

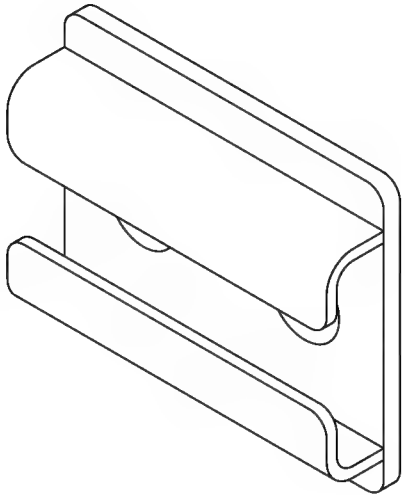
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

SCALE 2:1 DATE 11/19/2012 SHEET 20 OF 43

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-41** ADDED MISSING .519 DIM., CH'D FINISH FROM POWDER COAT YELLOW.	1/18/2013	RJC	SE
2	14-0167	**-41** CH'D DIM WAS .519 IS (.519).	10/22/2014	DPD	JAG







SEE ATTACHED DEVIATION

(-41)

GUIDE WELDMENT

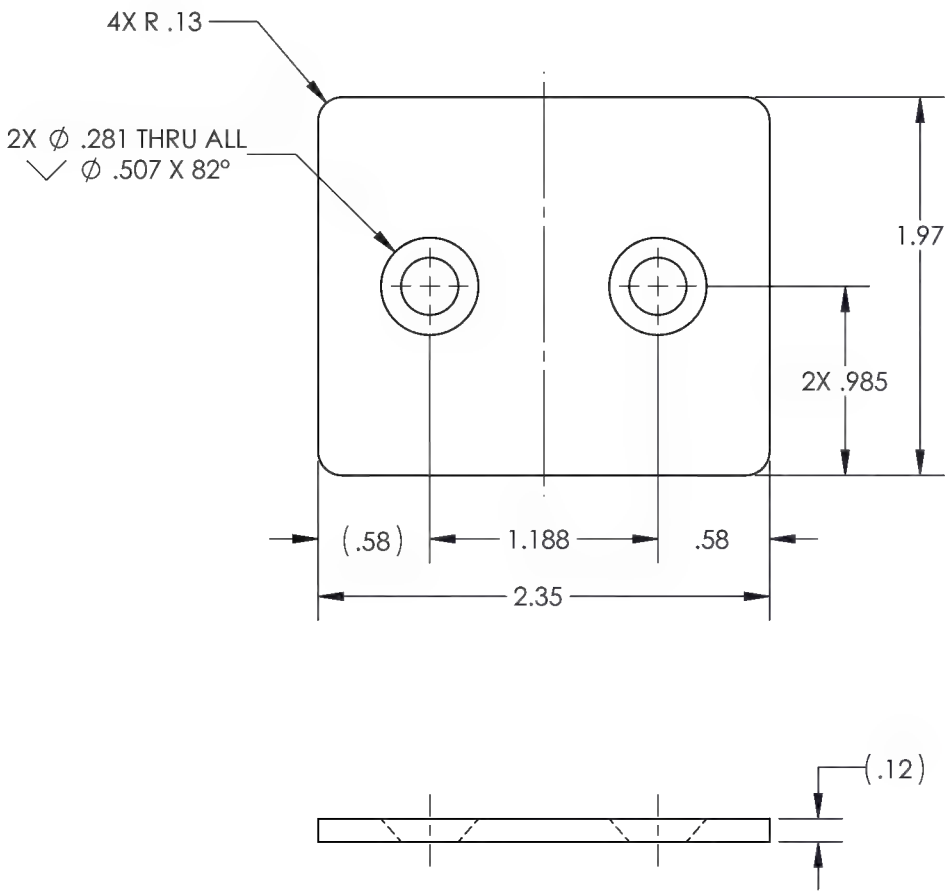
DART AEROSPACE

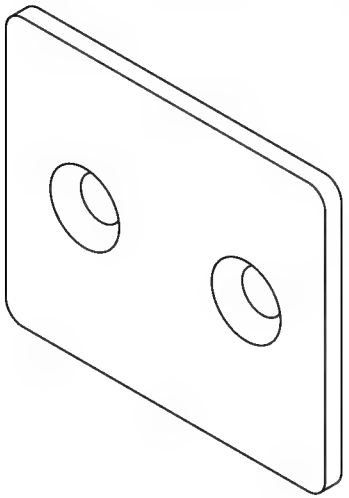
TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-41
REV	2
MAT'L	
DRAWN BY:	CLOUGH
APPROVED	D Weil
HEAT TREAT	
FINISH	YELLOW ZINC
SPEC	.0002-.0004 THICK
USED ON MODEL	AW139
SCALE	1:1
DATE	11/19/2012
SHEET	21 OF 43

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .005 FRACTIONS ± 1/8
.XX ± .01 ANGLES ±.5°
.X ± .1

1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-43** CH'D ⌵ FROM Ø.466 TO Ø.507.	1/18/2013	RJC	SE
2	14-0167	**-43** CH'D DIM WAS .12 IS (.12).	10/22/2014	DPD	JAG





SEE ATTACHED DEVIATION

(-43)

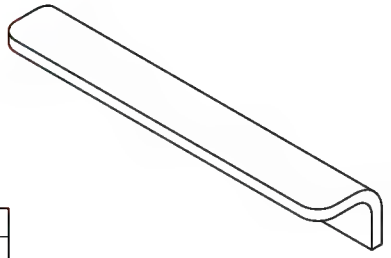
GUIDE PLATE

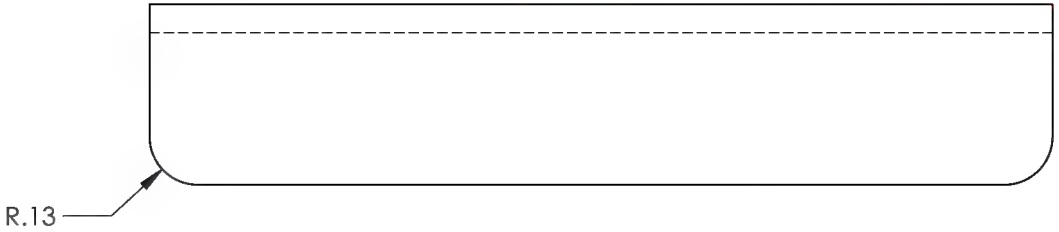
DART AEROSPACE

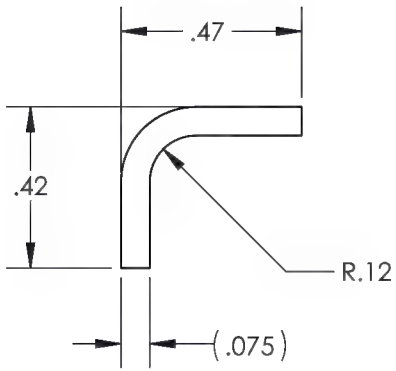
TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-43
REV	2
MAT'L 1018	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .010 FRACTIONS ± 1/8 .XX ± .03 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -41 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:1	DATE 11/19/2012
	SHEET 22 OF 43

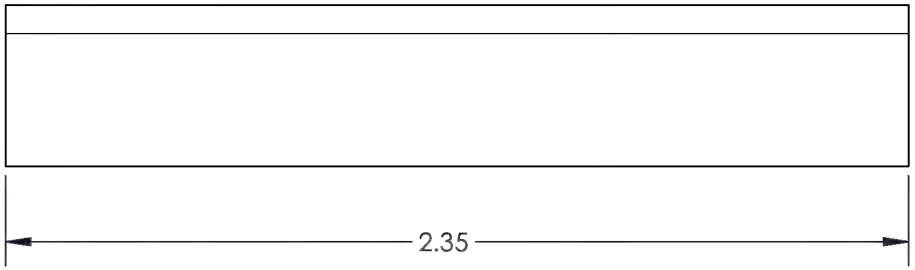
REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-45** ADDED TOLERANCE ±.030 TO .42 & .47 DIMENSIONS.	1/18/2013	RJC	SE

SEE ATTACHED DEVIATION









-45

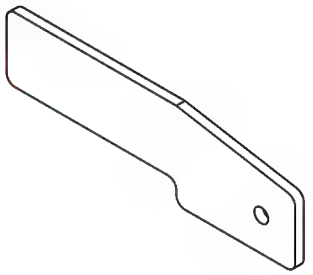
GUIDE

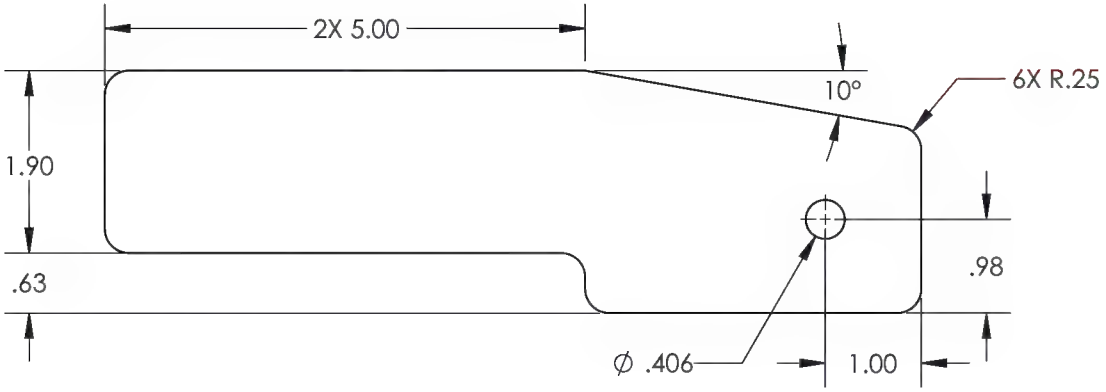
DART AEROSPACE

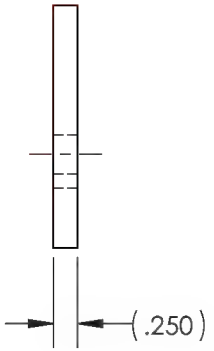
TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-45
REV	2
MAT'L C.R. STEEL	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .010 FRACTIONS ± 1/8 .XX ± .03 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -41 WELDMENT SPEC USED ON MODEL AW139
SCALE 2:1	DATE 11/19/2012
	SHEET 23 OF 43

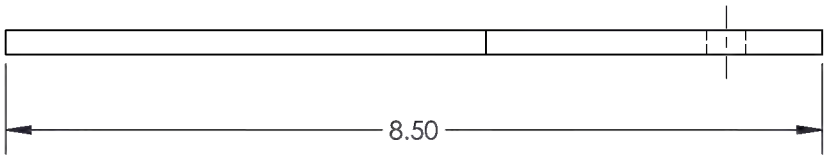
REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-48** NEW DESIGN WHEEL BRACKET REPLACED -47, -49, -51.	1/24/2013	RJC	SE

SEE ATTACHED DEVIATION









(-48)

WHEEL BRACKET

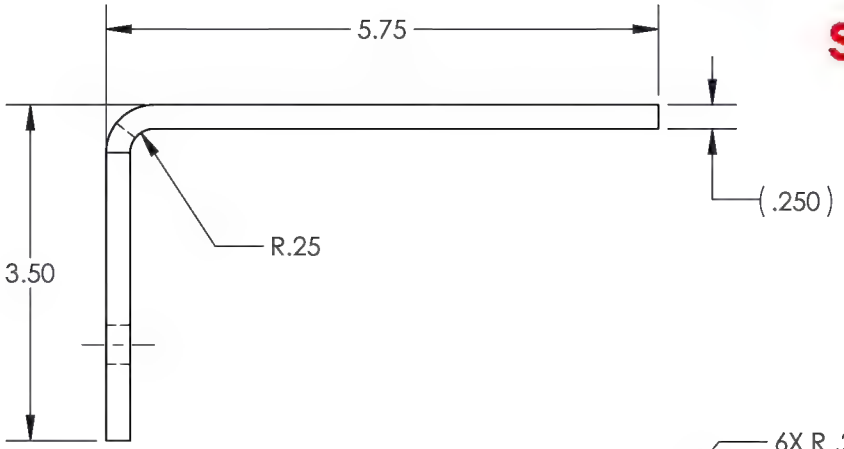
DART AEROSPACE

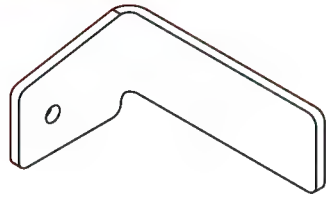
TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-48
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .010 FRACTIONS ± 1/8 .XX ± .03 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -5 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:2	DATE 1/22/2013
SHEET 24 OF 43	

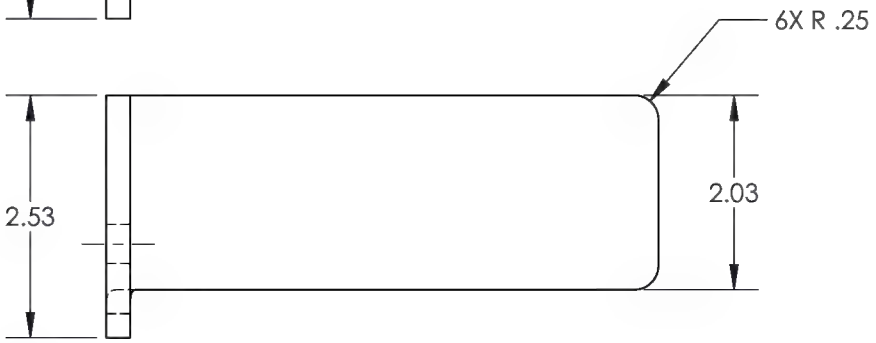
REVISIONS

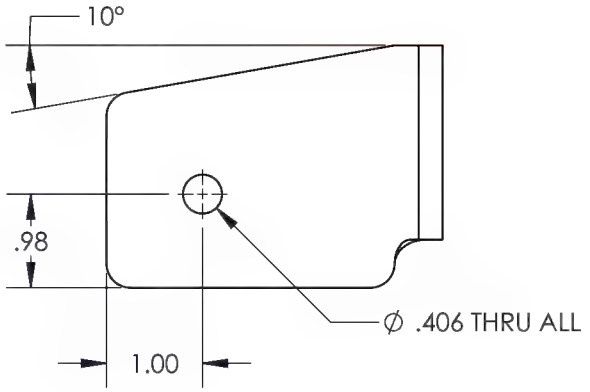
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-54** NEW DESIGN WHEEL BRACKET REPLACED -53, -55, -57.	1/24/2013	RJC	SE
2	14-0167	**-54** CH'D MAT'L WAS 6061 SQ TUBE IS 6061, ADDED MISSING DIM R.25, CH'D DIM WAS 5X R.25 IS 6X R.25.	9/30/2014	DPD	GE

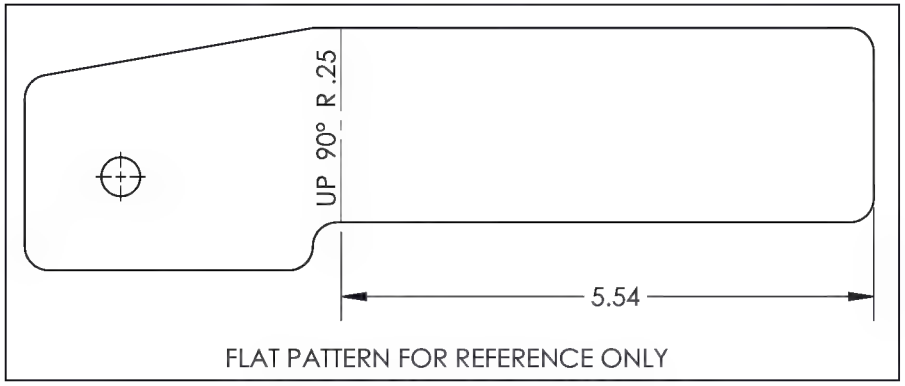
SEE ATTACHED DEVIATION











FLAT PATTERN FOR REFERENCE ONLY

(-54)

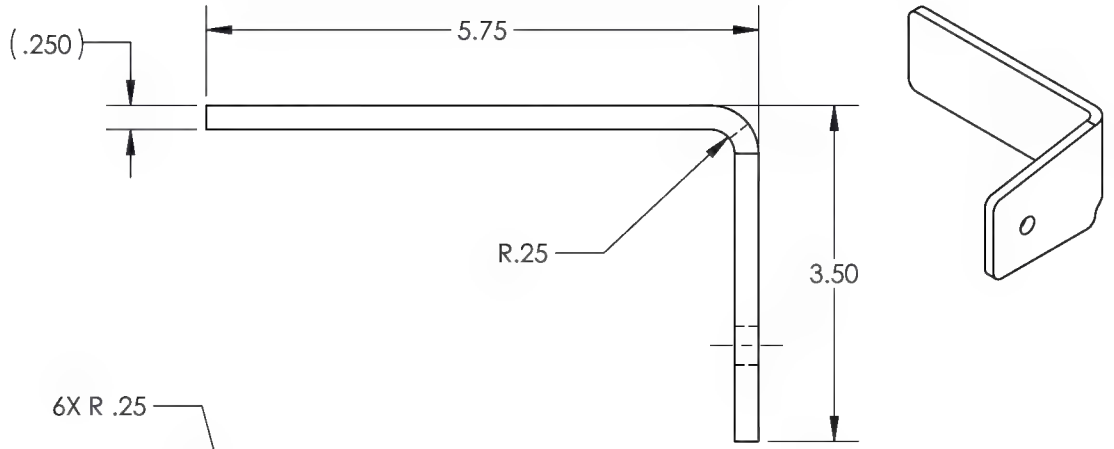
R FRT. INSIDE WHEEL BRACKET

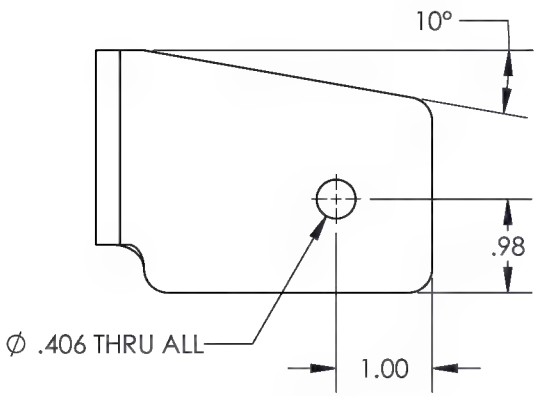
DART AEROSPACE

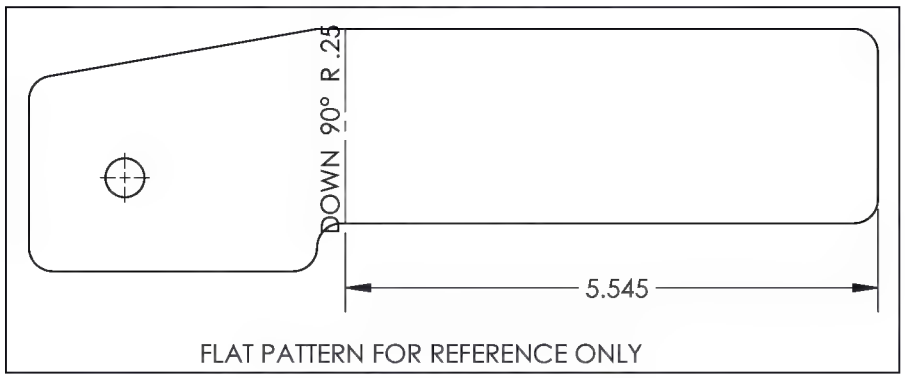
TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-54
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .010 FRACTIONS ± 1/8 .XX ± .03 ANGLES ±.5° .X ± .1	APPROVED D Weil
	HEAT TREAT
	FINISH SEE -5 WELDMENT
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R	SPEC
2. DIMENSIONAL LIMITS APPLY AFTER PLATING	USED ON MODEL AW139
SCALE 1:2	DATE 1/22/2013
	SHEET 25 OF 43

REVISIONS

REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-56** NEW DESIGN WHEEL BRACKET REPLACED -53, -55, -57.	1/24/2013	RJC	SE
2	14-0167	**-56** CH'D MAT'L WAS 6061 SQ TUBE IS 6061, ADDED MISSING DIM R.25, CH'D DIM WAS 5X R.25 IS 6X R.25.	9/30/2014		







FLAT PATTERN FOR REFERENCE ONLY

(-56)

L FRT. INSIDE WHEEL BRACKET

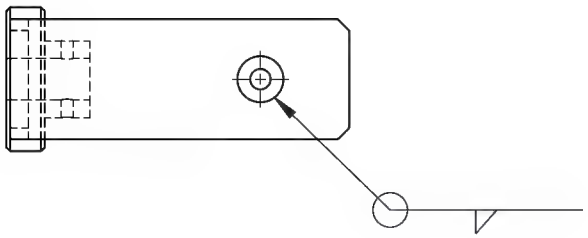
SEE ATTACHED DEVIATION

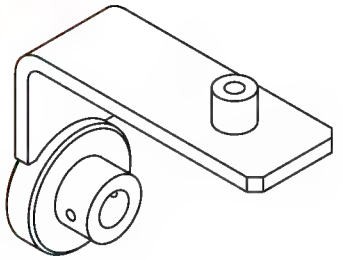
DART AEROSPACE

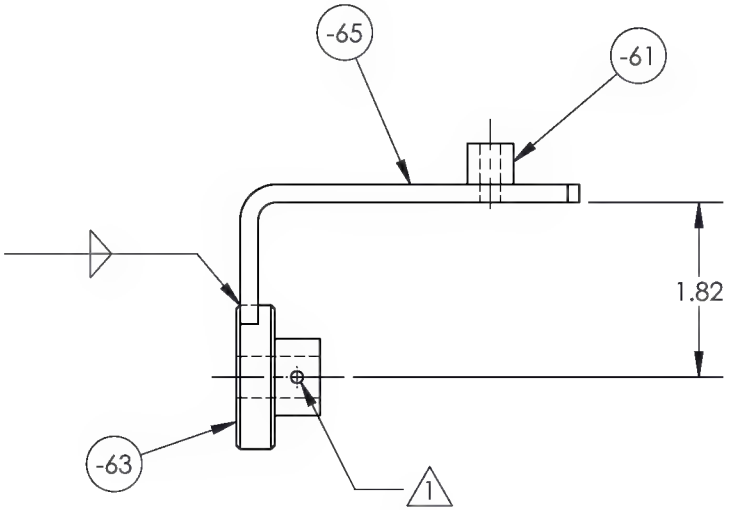
TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-56
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .010 FRACTIONS ± 1/8 .XX ± .03 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -5 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:2	DATE 1/22/2013
	SHEET 26 OF 43

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-59** CH'D FINISH FROM POWDER COAT YELLOW TO YELLOW ZINC.	1/18/2013	RJC	SE

SEE ATTACHED DEVIATION







-59

PIN SLIDE WELDMENT

NOTE:

1. ORIENTATION IS NOT CRITICAL, ALIGN AS SHOWN BY EYE.

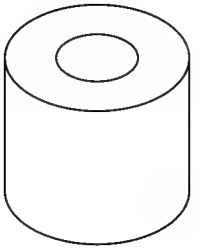
DART AEROSPACE

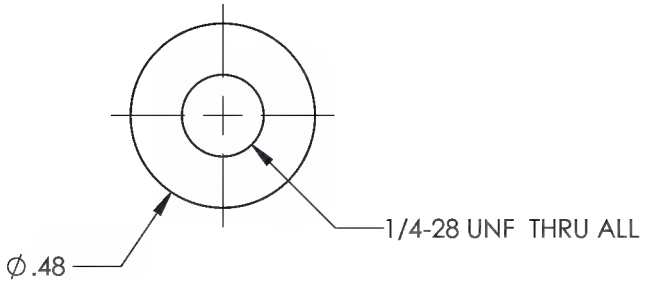
TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-59
REV	2
MAT'L	
DRAWN BY:	CLOUGH
APPROVED	D Weil
HEAT TREAT	
FINISH	YELLOW ZINC
SPEC	.0002-.0004 THICK
USED ON MODEL	AW139
SCALE	1:2
DATE	11/19/2012
SHEET	27 OF 43

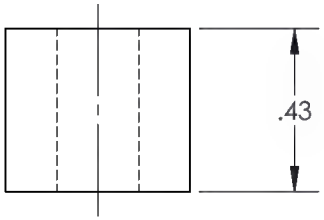
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .005 FRACTIONS ± 1/8
.XX ± .01 ANGLES ±.5°
.X ± .1

1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED







SEE ATTACHED DEVIATION

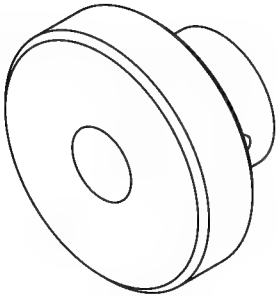
(-61)

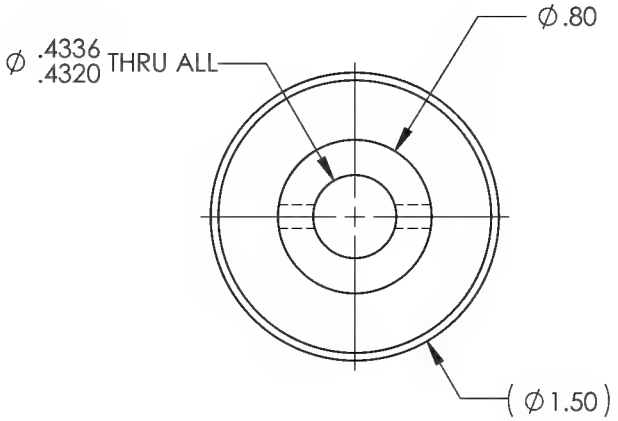
BUSHING

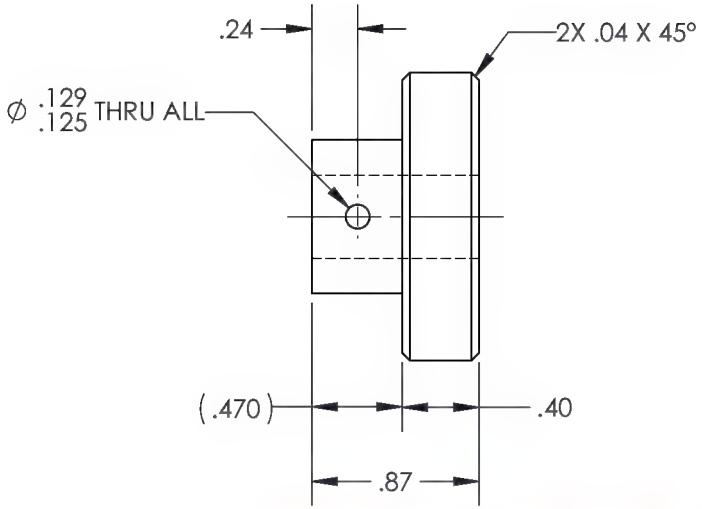
DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-61
REV	2
MAT'L 1018	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -59 WELDMENT SPEC USED ON MODEL AW139
SCALE 2:1	DATE 11/19/2012
SHEET 28 OF 43	

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED







SEE ATTACHED DEVIATION

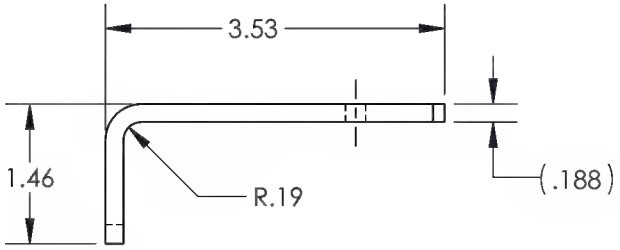
(-63)

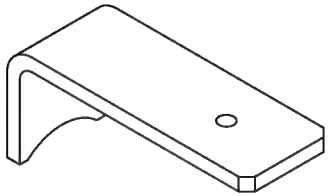
PIN ATTACHMENT

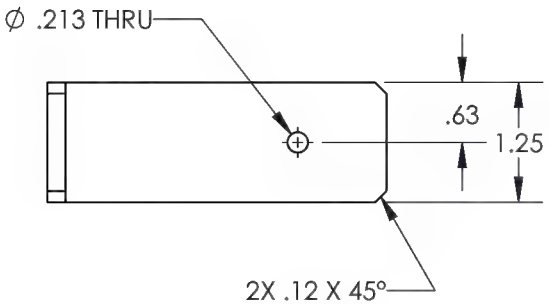
DART AEROSPACE

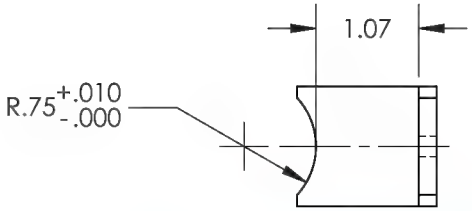
TITLE	TOW BAR (FLIR)
DWG NO.	RBW0905G10331-3G-03-63
REV	2
MAT'L 1018	DRAWN BY: GILBERT
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -59 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:1	DATE 11/20/2012
SHEET 29 OF 43	

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED









SEE ATTACHED DEVIATION

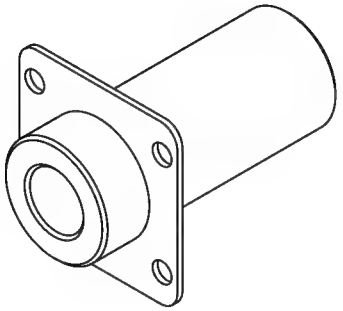
-65

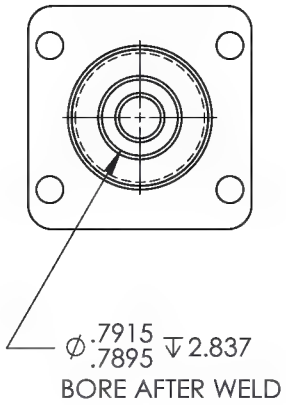
SLIDE BAR

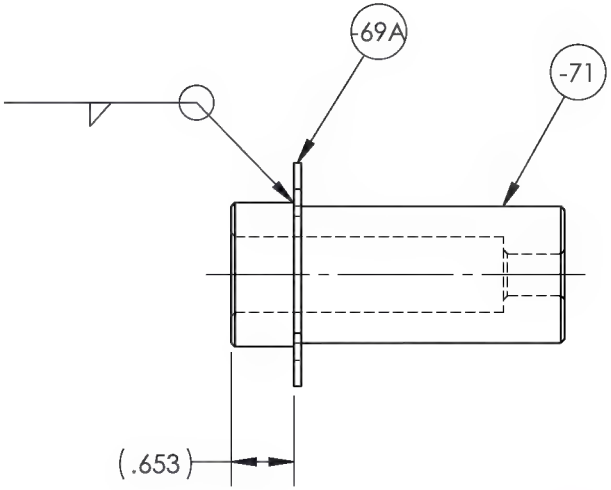
DART AEROSPACE

TITLE	TOW BAR (FLIR)
DWG NO.	RBW0905G10331-3G-03-65
REV	2
MAT'L 1018	DRAWN BY: GILBERT
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .010 FRACTIONS ± 1/8 .XX ± .03 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -59 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:2	DATE 11/20/2012
SHEET 30 OF 43	

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-67** ADDED Ø.7915 - .7895 BORE AFTER WELD, CH'D FINISH FROM POWDER COAT YELLOW TO YELLOW ZINC.	1/18/2013	RJC	SE
2	14-0167	**-67** CH'D DIM WAS LIMITS Ø.7895-.7915 IS LIMITS Ø.7895-.7915 ↧2.837.	10/22/2014	DPD	JAG







SEE ATTACHED DEVIATION

-67

PIN HOUSING WELDMENT

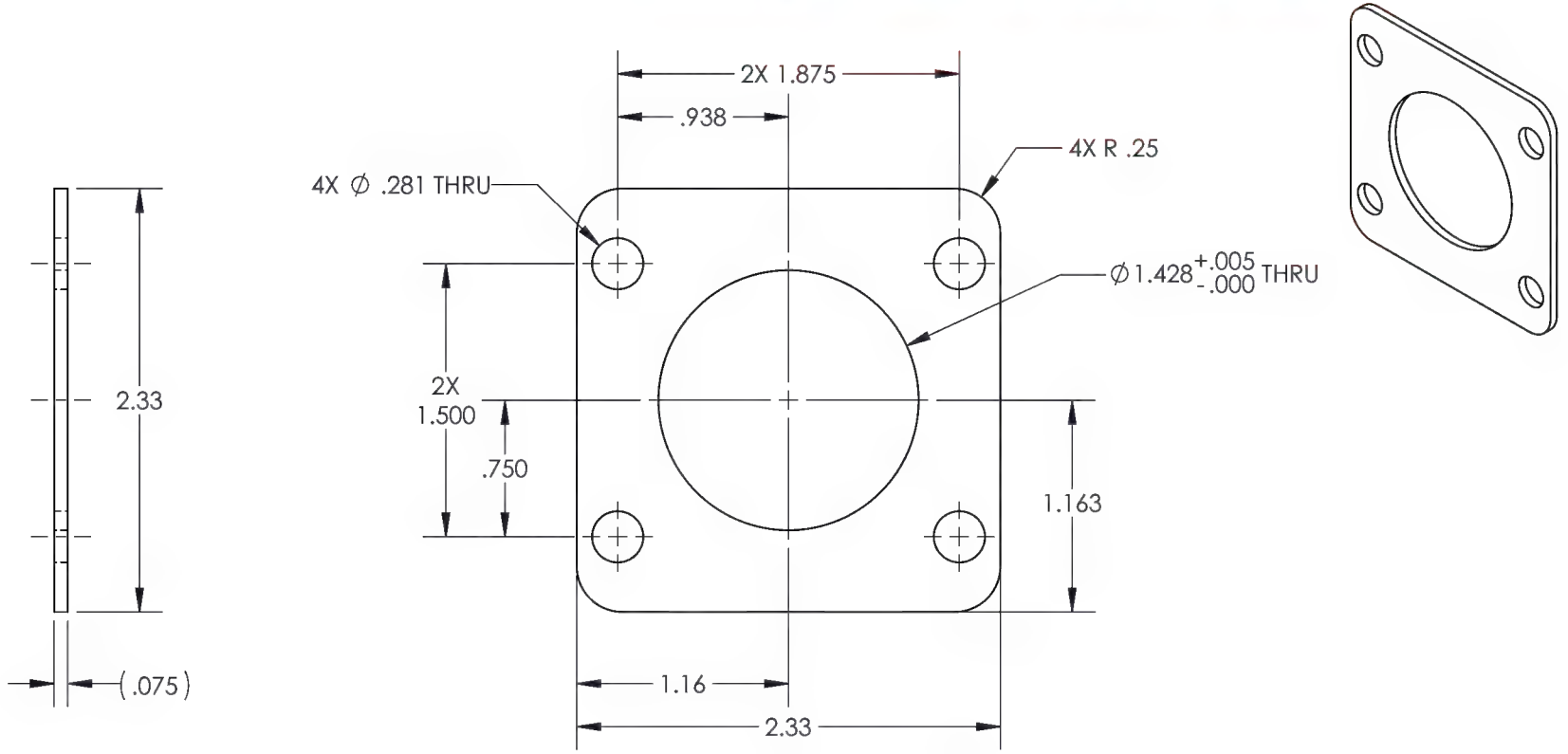
DART AEROSPACE

TITLE	TOW BAR (FLIR)
DWG NO.	RBW0905G10331-3G-03-67
REV	2
MAT'L	
DRAWN BY:	GILBERT
APPROVED	D Weil
HEAT TREAT	
FINISH	YELLOW ZINC
SPEC	.0002-.0004 THICK
USED ON MODEL	AW139
SCALE	1:2
DATE	11/20/2012
SHEET	31 OF 43

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .005 FRACTIONS ± 1/8
.XX ± .01 ANGLES ±.5°
.X ± .1
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-69** CH'D TO -69A & -69B, ADDED TABLE FOR FINISH CALL OUT.	1/21/2013	RJC	SE
2	14-0167	**-69A** & **-69B** DELETED DIMS .225, .413. ADDED DIMS .938, .750.	10/22/2014	DPD	JAG

SEE ATTACHED DEVIATION



(-69A) & (-69B)
HOUSING PLATE

-69A	2	NO FINISH, SEE -67 WELDMENT
-69B	2	YELLOW ZINC .0002 - .0004 FINISH

DART AEROSPACE

TITLE: TOW BAR (FLIR)

DWG NO. RBW0905G10331-3G-03-69A & -69B REV 2

MAT'L 1018

DRAWN BY: CLOUGH

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .010 FRACTIONS ± 1/8
.XX ± .03 ANGLES ±.5°
.X ± .1

1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

APPROVED: D Weil

HEAT TREAT

FINISH: SEE TABLE

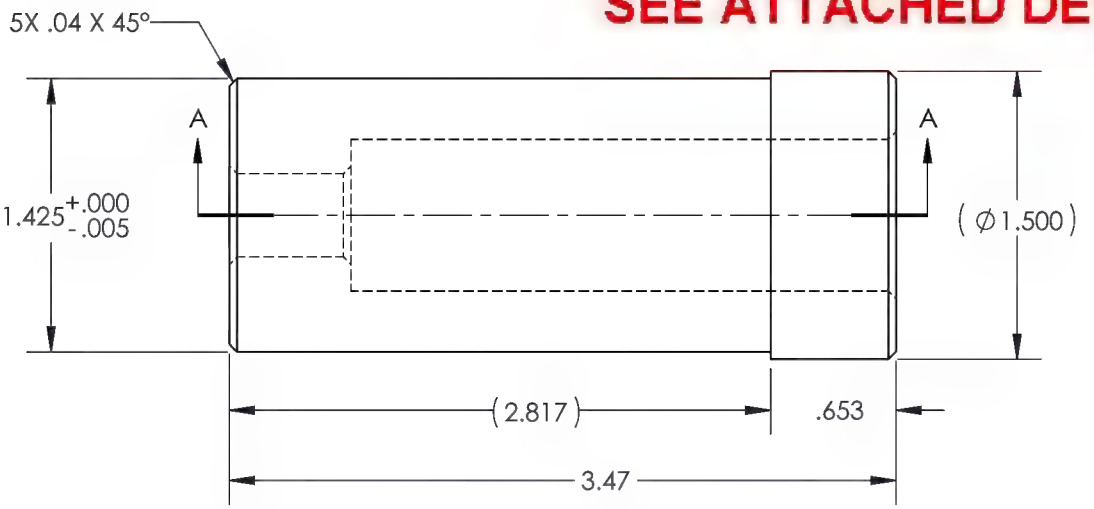
SPEC

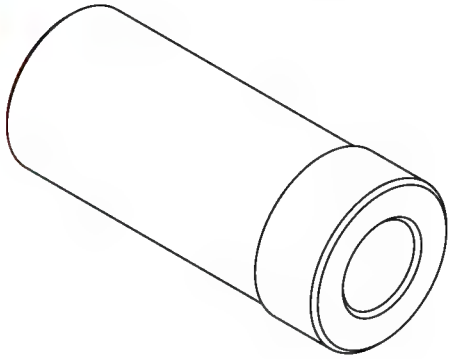
USED ON MODEL: AW139

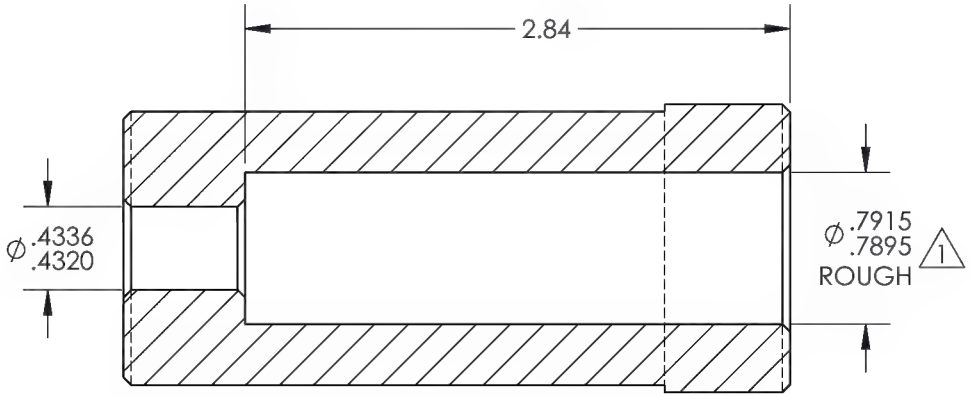
SCALE 1:1 DATE 11/19/2012 SHEET 32 OF 43

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-71** CH'D Ø1.422 +.000-.005 TO Ø1.425 +.000-.002, ADDED ROUGH & 1 NOTE TO Ø.7915-.7895.	1/18/2013	RJC	SE
2	14-0167	**-71** CH'D DIM WAS Ø1.425 +.000 -.002 IS Ø1.425 +.000 -.005.	10/22/2014	DPD	JAG

SEE ATTACHED DEVIATION







SECTION A-A

(-71)

PIN HOUSING

NOTE:

1. AFTER WELDING SEE -67 FINISH BORE TO ACHIEVE DIMENSION.

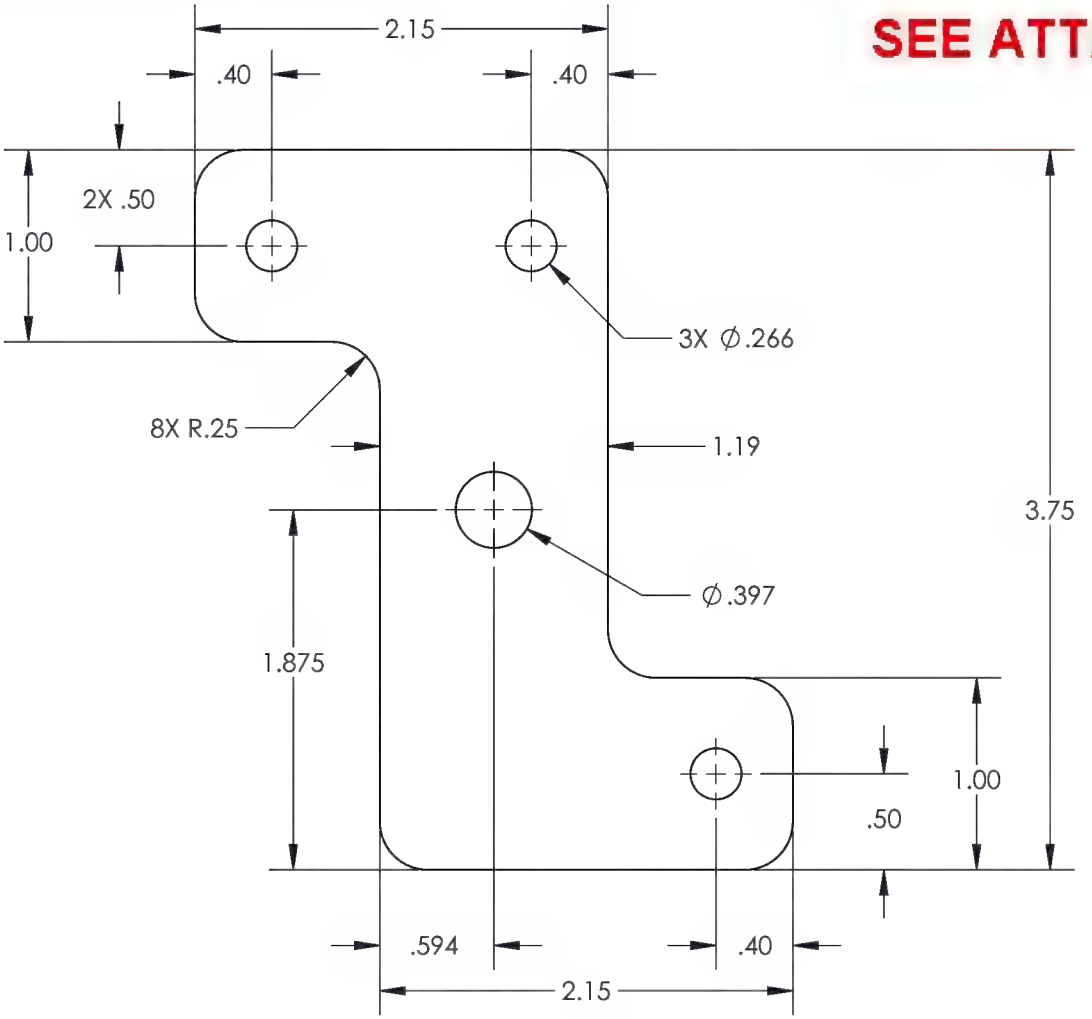
DART AEROSPACE

TITLE	TOW BAR (FLIR)
DWG NO.	RBW0905G10331-3G-03-71
REV	2
MAT'L 1018	DRAWN BY: GILBERT
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SEE -67 WELDMENT SPEC USED ON MODEL AW139
SCALE 1:1	DATE 11/20/2012
SHEET 33 OF 43	

REVISIONS

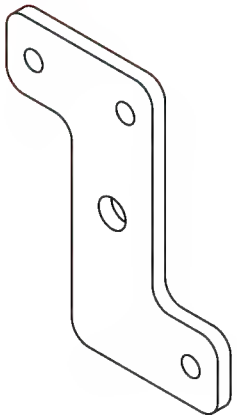
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
2	14-0167	**-73** DELETED DIM 1.350. ADDED DIM .40.	10/22/2014	DPD	JAG

SEE ATTACHED DEVIATION



(-73)

BELL CRANK



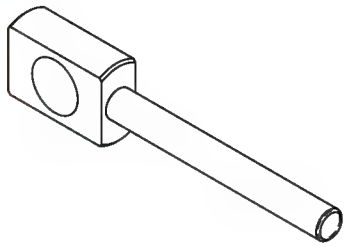
NOTE:
1. MASK HOLES PRIOR TO POWDER COATING.

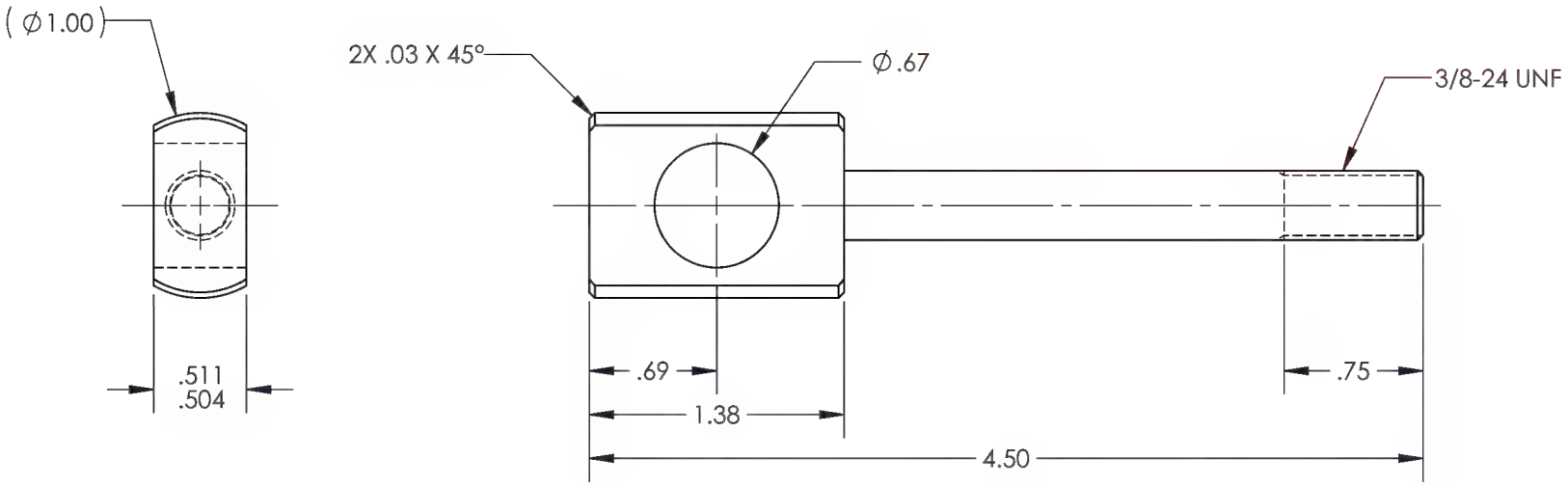
DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-73
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .010 FRACTIONS ± 1/8 .XX ± .03 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH POWDER COAT YELLOW SPEC FED #13538 USED ON MODEL AW139
SCALE 1:1	DATE 11/19/2012
	SHEET 34 OF 43

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-75** CH'D OD FROM Ø.750 TO (Ø1.00), CH'D FLAT DIM. FROM .636 - .629 TO .511 - .504, CH'D HOLE FROM Ø.465 TO Ø.672.	1/18/2013	RJC	SE

SEE ATTACHED DEVIATION





-75

CABLE BOLT

DART AEROSPACE

TITLE: TOW BAR, (FLIR)

DWG NO. RBW0905G10331-3G-03-75 REV 2

MAT'L 12L14

DRAWN BY: CLOUGH

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .005 FRACTIONS ± 1/8
.XX ± .01 ANGLES ±.5°
.X ± .1

1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

APPROVED: D Weil

HEAT TREAT

FINISH: YELLOW ZINC

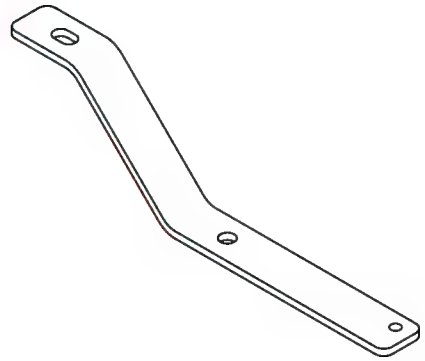
SPEC: .0002 - .0004

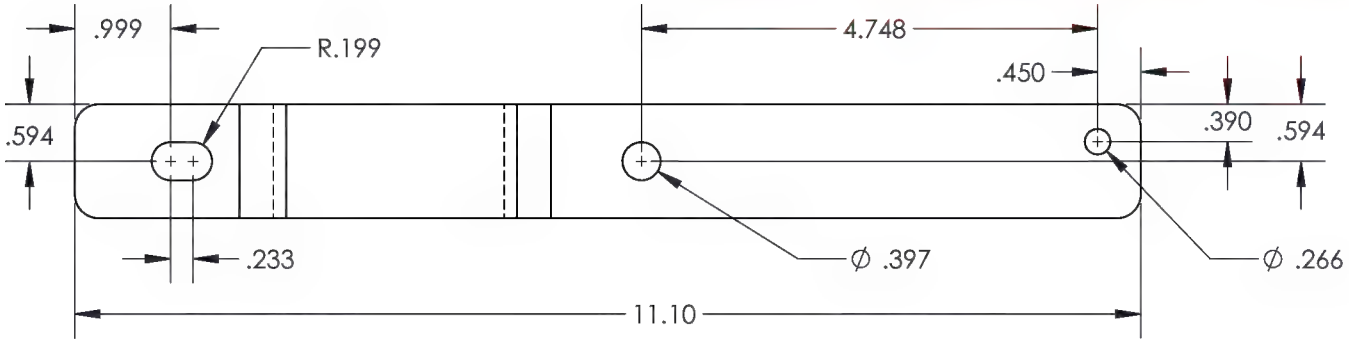
USED ON MODEL: AW139

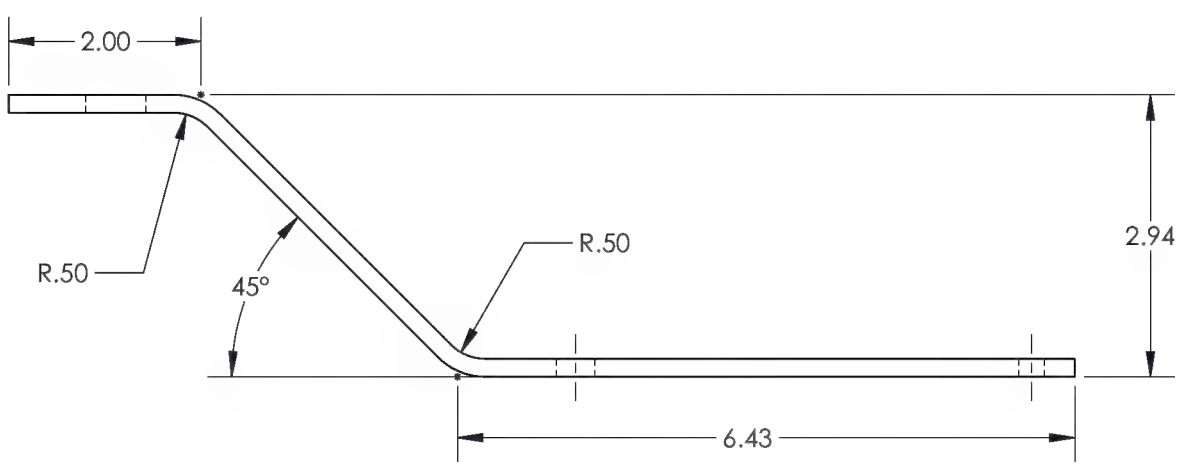
SCALE 1:1 DATE 11/19/2012 SHEET 35 OF 43

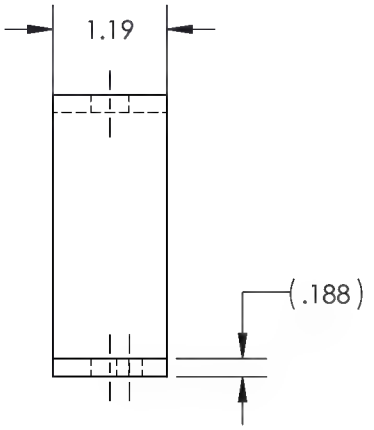
REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-77** ADDED MISSING Ø.266 HOLE DIM., ADDED ±.030 TOLERANCE TO 1.188 DIM.	1/18/2013	RJC	SE

SEE ATTACHED DEVIATION









(-77)

TRANSFER BAR RIGHT

DART AEROSPACE

TITLE: TOW BAR (FLIR)

DWG NO. RBW0905G10331-3G-03-77 REV 2

MAT'L 6061

DRAWN BY: GILBERT

APPROVED: D Weil

HEAT TREAT

FINISH: POWDER COAT YELLOW

SPEC: FED #13538

USED ON MODEL: AW139

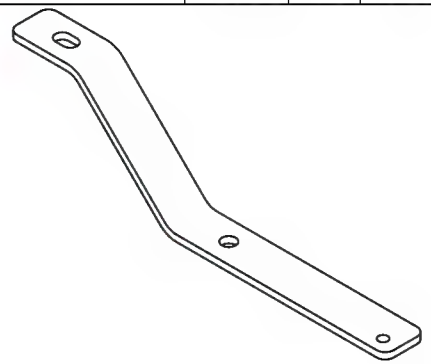
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .010 FRACTIONS ± 1/8
.XX ± .03 ANGLES ±.5°
.X ± .1

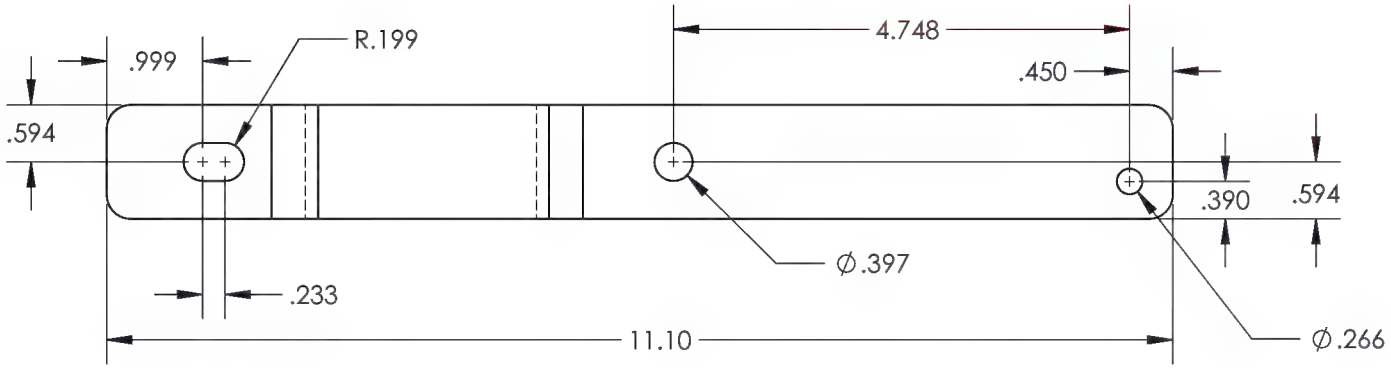
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

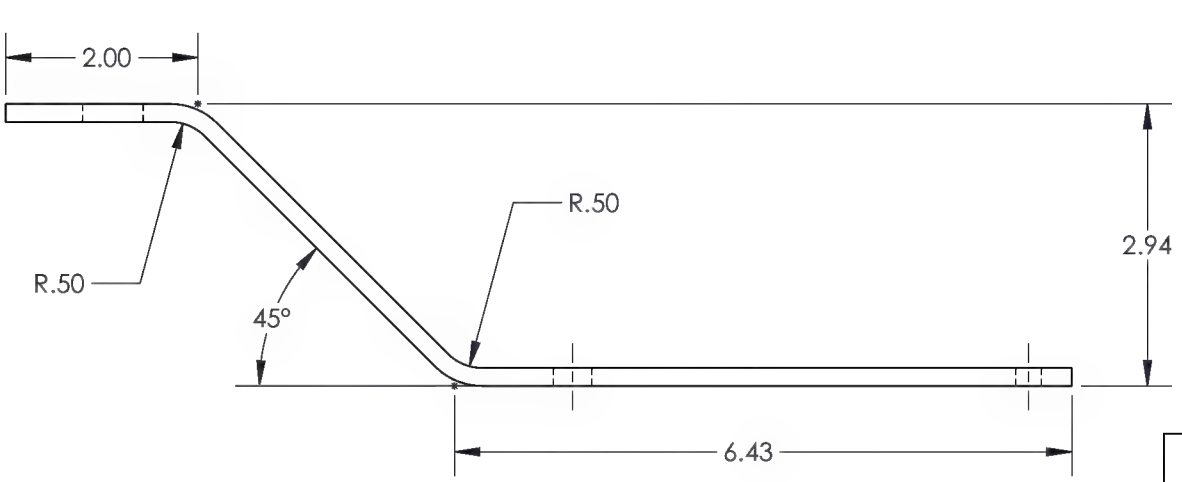
SCALE 1:2 DATE 11/28/2012 SHEET 36 OF 43

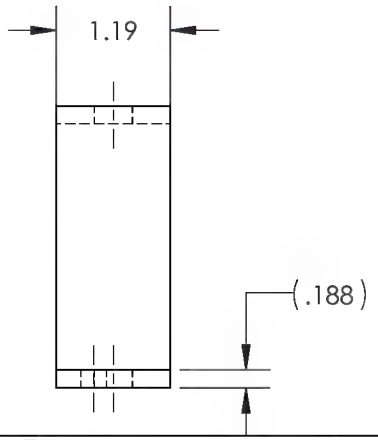
REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-79** ADDED MISSING Ø.266 HOLE DIM., ADDED ±.030 TOLERANCE TO 1.188 DIM.	1/18/2013	RJC	SE
2	14-0167	**-79** CH'D DIM WAS .188 IS (.188).	10/22/2014	DPD	JAG

SEE ATTACHED DEVIATION









-79

TRANSFER BAR LEFT

DART AEROSPACE

TITLE: TOW BAR (FLIR)

DWG NO. RBW0905G10331-3G-03-79 REV 2

MAT'L 6061

DRAWN BY: GILBERT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .010 FRACTIONS ± 1/8
.XX ± .03 ANGLES ±.5°
.X ± .1
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

APPROVED D Weil

HEAT TREAT

FINISH POWDER COAT YELLOW

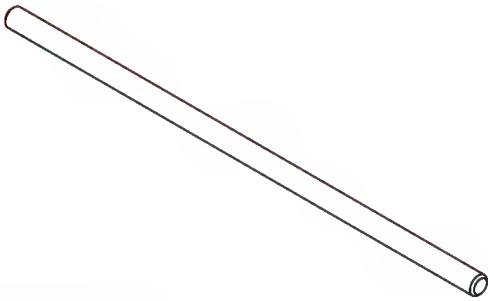
SPEC FED #13538

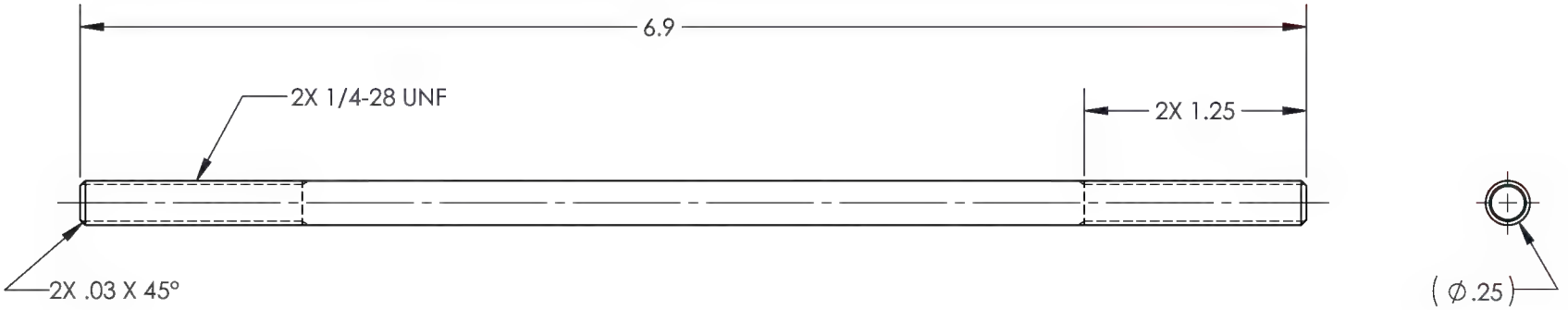
USED ON MODEL AW139

SCALE 1:2 DATE 11/28/2012 SHEET 37 OF 43

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED

SEE ATTACHED DEVIATION





(-81)

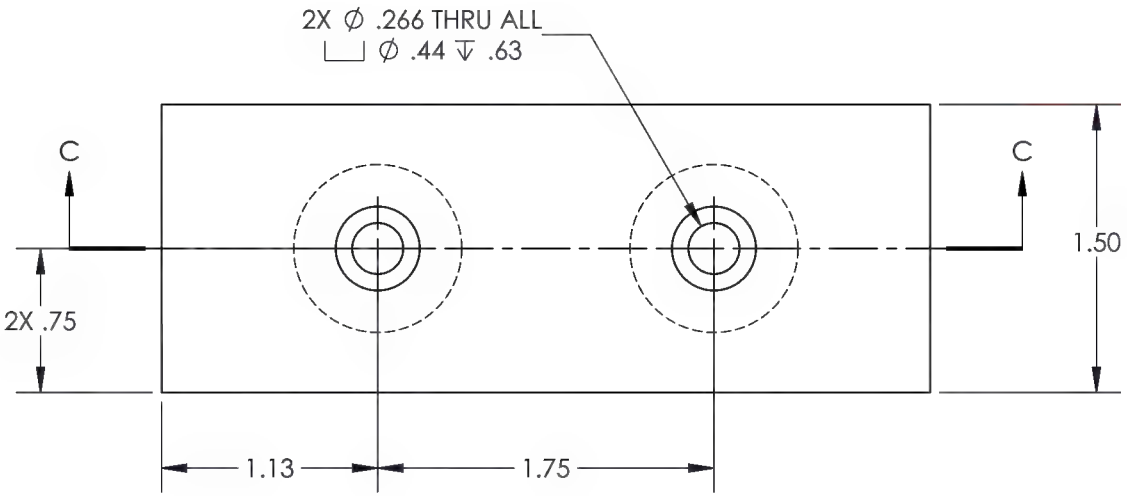
SLIDE LINKAGE ROD

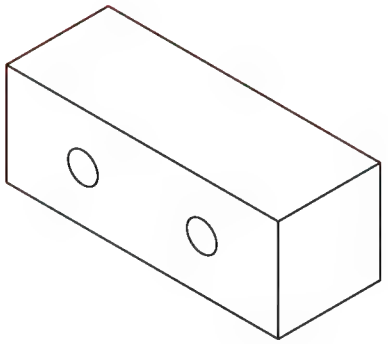
DART AEROSPACE

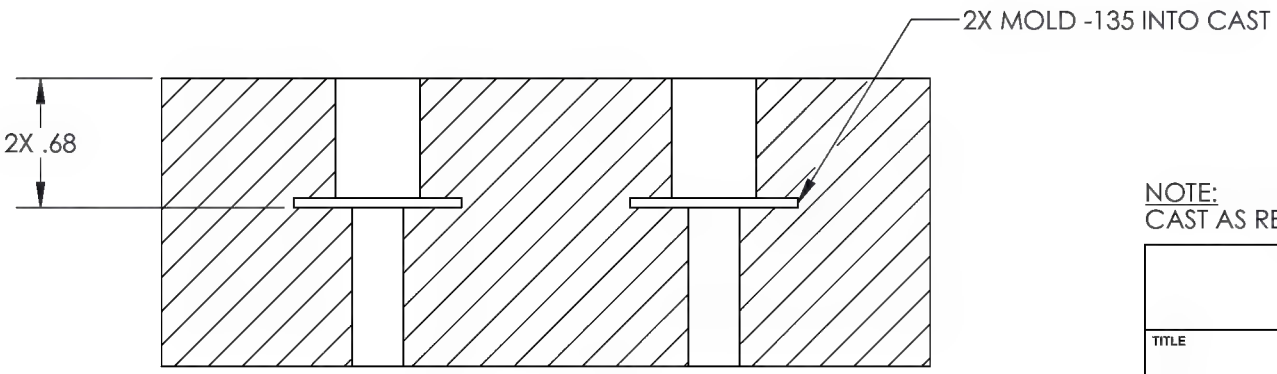
TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-81
REV	2
MAT'L 12L14	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH YELLOW ZINC SPEC .0002 - .0004 USED ON MODEL AW139
SCALE 1:1	DATE 11/19/2012

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-83** ADDED NOTE TO MOLD -135 WASHER INTO CAST, CH'D MATERIAL FROM POLYURETHANE 45-50A.	1/18/2013	RJC	SE

SEE ATTACHED DEVIATION







SECTION C-C

-83

PAD

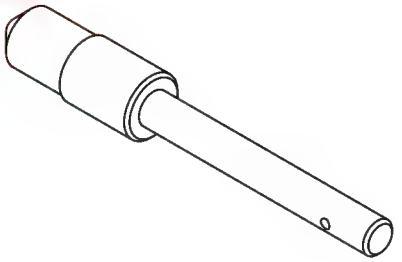
NOTE:
CAST AS REQUIRED.

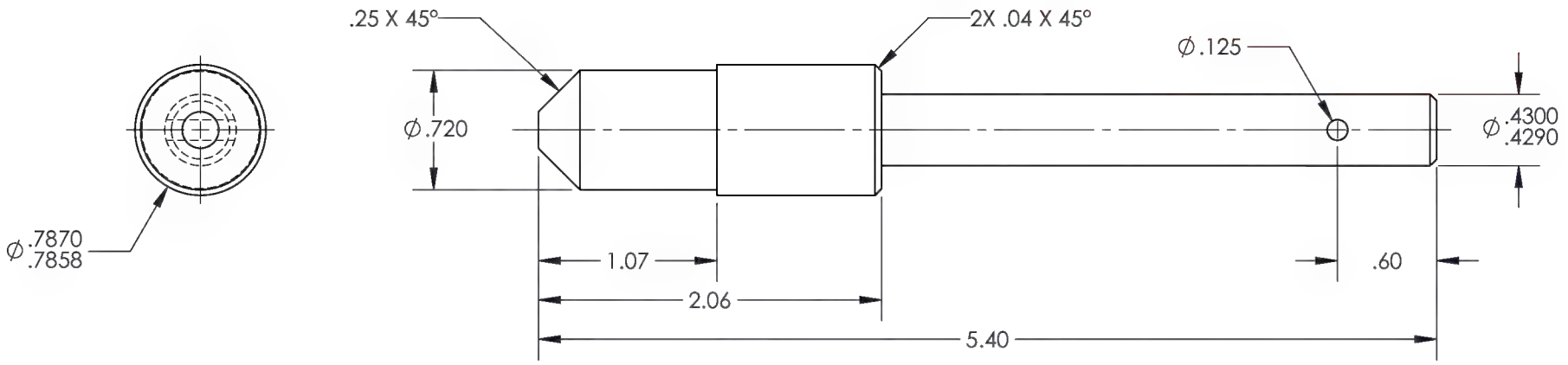
DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-83
REV	2
MAT'L URETHANE 60A	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1	APPROVED D Weil
	HEAT TREAT
	FINISH
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R	SPEC
2. DIMENSIONAL LIMITS APPLY AFTER PLATING	USED ON MODEL: AW139
SCALE 1:1	DATE 11/19/2012
	SHEET 39 OF 43

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED

SEE ATTACHED DEVIATION





-85

PIN

DART AEROSPACE

TITLE: TOW BAR (FLIR)

DWG NO. RBW0905G10331-3G-03-85 REV 2

MAT'L 4140

DRAWN BY: GILBERT

APPROVED D Weil

HEAT TREAT RC 40-45

FINISH YELLOW ZINC

SPEC .0002 - .0004

USED ON MODEL AW139

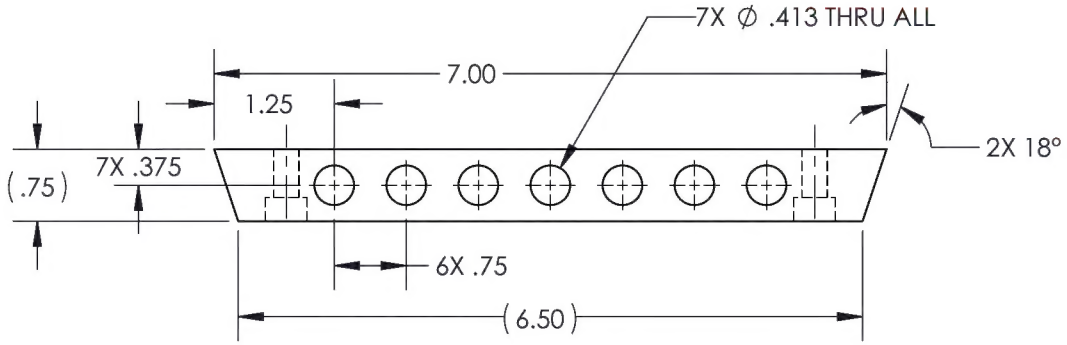
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .005 FRACTIONS ± 1/8
.XX ± .01 ANGLES ±.5°
.X ± .1

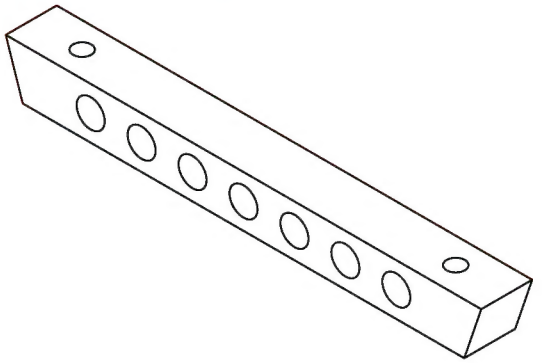
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

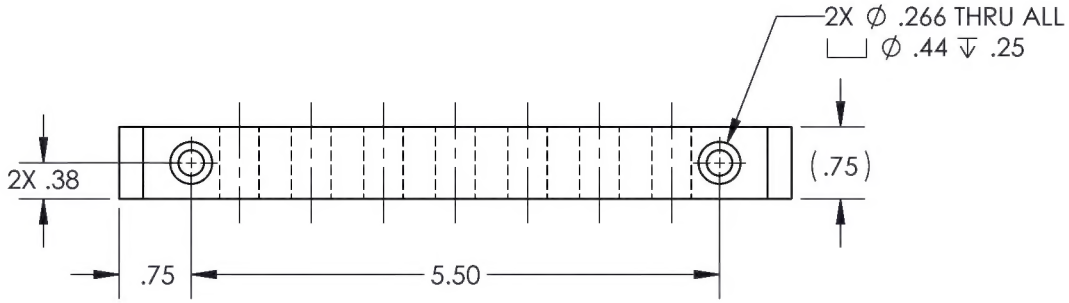
SCALE 1:1 DATE 11/28/2012 SHEET 40 OF 43

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
2	14-0167	**-87** CH'D DIM WAS 6.50 IS (6.50).	10/22/2014	DPD	JAG

SEE ATTACHED DEVIATION







(-87)

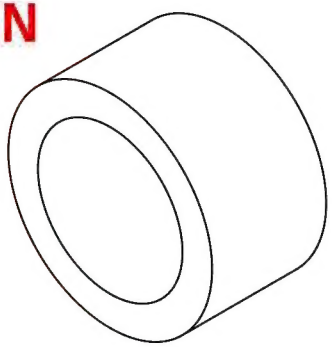
TONGUE SHEER BOLT HOLDER

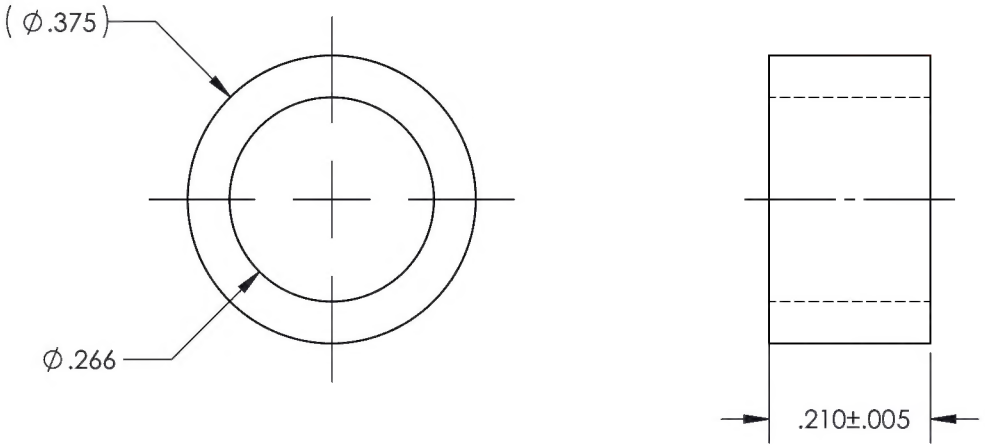
DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-87
REV	2
MAT'L 6061	DRAWN BY: CLOUGH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1	APPROVED D Weil
	HEAT TREAT
	FINISH CLEAR ANODIZE
1. BREAK ALL SHARP EDGES .015 x 45° OR .015R	SPEC MIL-A-8625F, TYPE II, CLASS I
	USED ON MODEL
2. DIMENSIONAL LIMITS APPLY AFTER PLATING	AW139
SCALE 1:2	DATE 11/19/2012

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		**-129** ADDED DWG, USED FOR -77 & -79 TRANSFER BARS.	1/24/2013	RJC	SE
2	14-0167	**-129** CH'D DIM WAS Ø.375 IS (Ø.375).	10/22/2014	DPD	JAG

SEE ATTACHED DEVIATION





-129

SLEEVE

DART AEROSPACE

TITLE: TOW BAR, (FLIR)

DWG NO. RBW0905G10331-3G-03-129 REV 2

MAT'L BRONZE

DRAWN BY: CLOUGH

APPROVED: D Weil

HEAT TREAT

FINISH

SPEC

USED ON MODEL: AW139

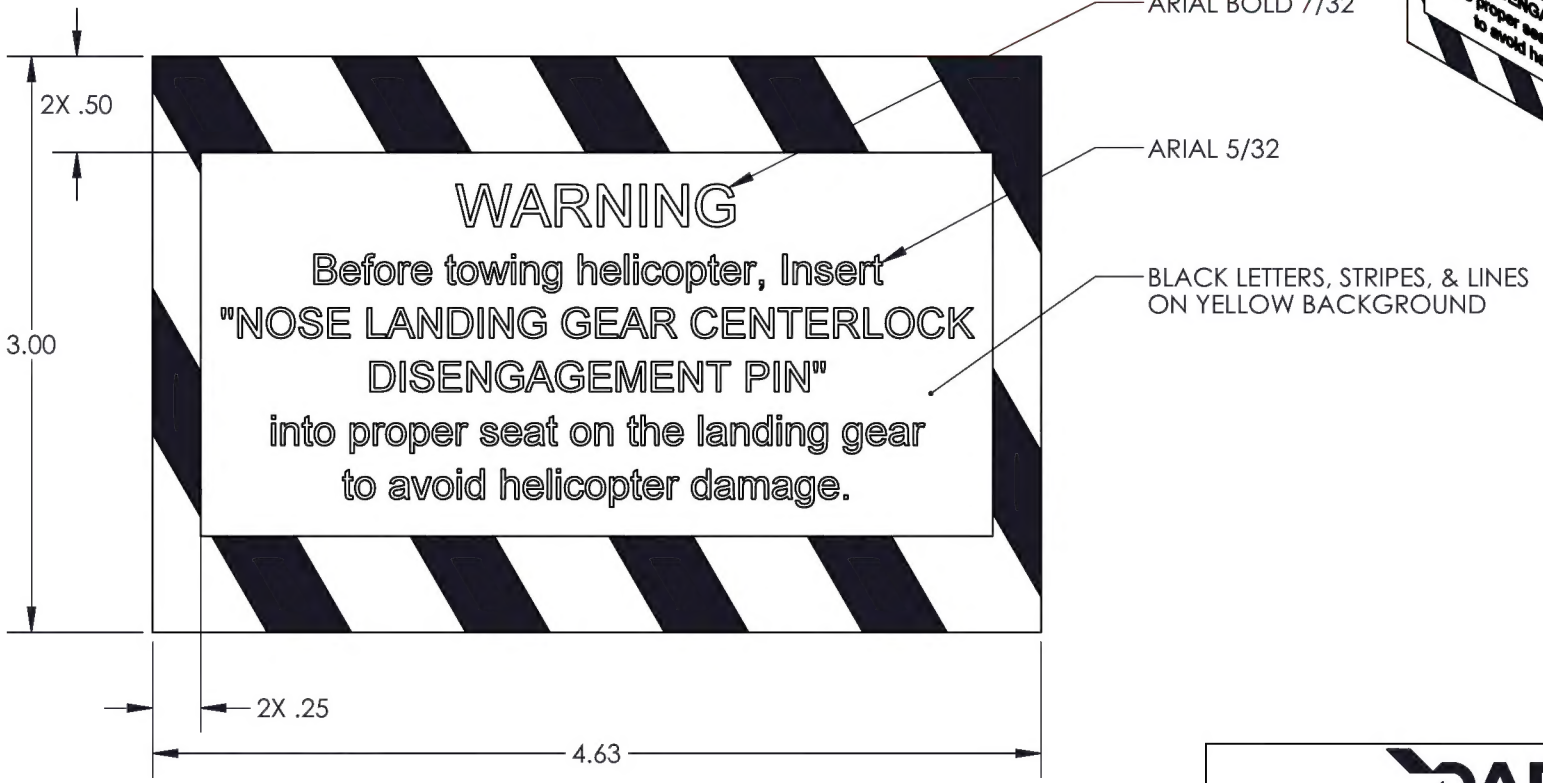
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
.XXX ± .005
.XX ± .01
.X ± .1
FRACTIONS ± 1/8
ANGLES ±.5°

1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
2. DIMENSIONAL LIMITS APPLY AFTER PLATING

SCALE 4:1 | DATE 1/23/2013 | SHEET 42 OF 43

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
2	14-0167	**-151** ADDED DRAWING.	10/1/2014	DPD	GE

SEE ATTACHED DEVIATION



(-151)

WARNING STICKER WITH ADHESIVE BACK

DART AEROSPACE

TITLE	TOW BAR, (FLIR)
DWG NO.	RBW0905G10331-3G-03-151
REV	2
MAT'L VINYL	DRAWN BY:
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ±.5° .X ± .1 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	APPROVED D Weil HEAT TREAT FINISH SPEC USED ON MODEL
SCALE 1:1	DATE 9/30/2014
SHEET 43 OF 43	

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: Date: Work Order update only ☐

Work Order: _____

Part No. RBW0905G10331-3G-03
Rev. 2

NCR No.

DISPOSITION

Rework	☐
Scrap	☐
Use-as-is	☐
Suspected Unapproved	☐

AGAINST DEPARTMENT/PROCESS

Skid-tube	☐	Cross tube	☐	Water Jet	☐	Engineering	☐
Machining	☐	Small Fab	☐	Prod. Eng. Coor.	☐	Quality	☐
Thermoforming	☐	Finishing	☐	Rec/Store/Packaging	☐	Other	☐
Large Fab	☐	Composite	☐	Supplier	☐		

Date :

Step #:

QTY Effective :

MRB (QSI042) Approval

Jan 25, 2019

Description Work Order Deviation

On assembly RBW0905G10331-3G-03 items: -23/-25 bend radius to be 1.00" (Was 0.19")

54/-56/ bend radius to be 0.375" (Was 0. 25")

Use material 6061-T4/T6.

PEC has revised Flat pattern with above bend radius and passed production test.

Disposition

- This deviation is acceptable.
- The fit, form and function of the part will be as originally intended.

Completed By

Lead hand / Supervisor Approval Verification

QC / QA Coordinator Approval

Root Cause

Environment			No Re-verification
Design	X		Operator
Doc/Data			Offset/Setup
Equip/Tooling			Supplier
Handling/Pre			Training
Material			Use for Testing
Internal Transport			Poor Information
Tribal Knowledge			Rushing
LOA		X	Product Improvement
Substation			Process Improvement
Past Expiry Date			Manufacturing Process
Misidentified			Past Due

FAULT CATEGORY

☐ Pressure/Forced	☐ Temperature/Cure	☐ Power Loss/Surge	☐ Positioned Wrong
☐ Bending	☐ Set-up	☐ Folio/Program	☐ Outside Dimensions
☐ Centre Not Concentric	☐ BOM/Route	☐ Grain	☐ Over/Under tolerance
☐ Cracks	☐ Broken/Damage/Defect	☐ Weld	☐ Part Incorrect
☐ Crimp/Kink/Ripple/Wave	☐ Inspection Incomplete/Unqualified	☐ Wrong Stock Pulled	☐ Part Lost/Missing
☐ Cuffs	☐ Contamination	☐ Out of Sequence	☐ Part Moved
☐ Crushing	☐ Countersink	☐ Off-set	☐ Drawing
☐ Heat Treat	☐ Cut Too Short	☐ Mislabeled	☐ Finish
☐ Wave/Twist in Tube	☐ Instructions Incomplete/Unclear	☐ Fit/Function	☐ Misread
☐ Marks/Chatter	☐ Drill Holes	☐ Misaligned/off center	☐ Turning Sequence

☐ OTHER :